Incozol 4

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

1.1 Product identifier

Trade name	:	Incozol 4
UK REACH Registration Number	:	UK-01-6693092877-6-0001
Substance name	:	bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate
EC-No.	:	261-879-6

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

Product use	:	Intermediate

1.3 Details of the supplier of the safety data sheet

Company name of supplier	:	Incorez Limited Miller Street Preston Lancashire PR1 1EA
Telephone	:	+44(0)1772 201964
Telefax	:	+44(0)1772 255670
E-mail address of person responsible for the SDS	:	sds@incorez.com

1.4 Emergency telephone number

National Chemical Emergency Centre (NCEC)
24 Hour Emergency Telephone Number +44 870 190 6777

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Sub-category 1B	H317: May cause an allergic skin reaction.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms	:		
Signal word	:	Warning	
Hazard statements	:	H317	May cause an allergic skin reaction.
		H319	Causes serious eye irritation.
		H411	Toxic to aquatic life with long lasting effects.
Precautionary statements	:	**Prevention:**	
		P261	Avoid breathing mist or vapours.
		P273	Avoid release to the environment.
		P280	Wear protective gloves/ eye protection/ face protection.
		Response:	
		P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
		P337 + P313	If eye irritation persists: Get medical advice/ attention.
		P391	Collect spillage.

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

EC-No. : 261-879-6

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
bis[2-[2-(1-methylethyl)-3-	59719-67-4	100	

oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate	261-879-6		

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician.

In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Do not induce vomiting without medical advice.
Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Allergic reactions
Excessive lachrymation
See Section 11 for more detailed information on health effects and symptoms.

Risks : irritant effects
sensitising effects

May cause an allergic skin reaction.
Causes serious eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

5.3 Advice for firefighters

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

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Deny access to unprotected persons.

6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Avoid exceeding the given occupational exposure limits (see section 8).
Do not get in eyes, on skin, or on clothing.
For personal protection see section 8.
Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Smoking, eating and drinking should be prohibited in the application area.
Follow standard hygiene measures when handling chemical products

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in accordance with local regulations.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Consult most current local Product Data Sheet prior to any use.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters *	Basis *

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate	Workers	Inhalation	Long-term systemic effects	29,4 mg/m3

	Workers	Skin contact	Long-term systemic effects	16,7 mg/kg
	Consumers	Inhalation	Long-term systemic effects	6,25 mg/m3
	Consumers	Skin contact	Long-term systemic effects	8,3 mg/kg
	Consumers	Ingestion	Long-term systemic effects	4,2 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate	Fresh water	0,0186 mg/l
	Marine water	0,00186 mg/l
	Fresh water sediment	0,709 mg/kg
	Marine sediment	0,0709 mg/kg
	Soil	1,131 mg/kg

8.2 Exposure controls

Engineering measures

Maintain air concentrations below occupational exposure standards.
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166
Eye wash bottle with pure water

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard must be worn at all times when handling chemical products. Reference number EN 374. Follow manufacturer specifications.

Suitable for short time use or protection against splashes:
Butyl rubber/nitrile rubber gloves (> 0,1 mm)
Contaminated gloves should be removed.
Suitable for permanent exposure:
Viton gloves (0.4 mm),
breakthrough time >30 min.

Skin and body protection : Protective clothing (e.g. Safety shoes acc. to EN ISO 20345, long-sleeved working clothing, long trousers). Rubber aprons and protective boots are additionaly recommended for mixing and stirring work.

Respiratory protection : No special measures required.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	tan
Odour	:	sweet
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	ca. 240 °C
Flammability (solid, gas)	:	No data available

Upper/lower flammability or explosive limits

Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	100,5 °C Method: closed cup
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
pH	:	Not applicable

Viscosity

Viscosity, kinematic	:	> 7 mm2/s (40 °C)

Solubility(ies)

Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	0,01 hPa
Density	:	ca. 1,08 g/cm3 (20 °C)
Relative vapour density	:	No data available
Particle characteristics	:	No data available

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

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

Acute toxicity

Not classified based on available information.

Components:

bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate:

Acute oral toxicity : LD50 Oral (Rat): > 5.000 mg/kg

Acute dermal toxicity : LD50 Dermal (Rabbit): > 2.000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Skin sensitisation
May cause an allergic skin reaction.

Respiratory sensitisation
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

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

Components:

bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate:

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 87,1 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Scenedesmus capricornutum (fresh water algae)): 18,6 mg/l Exposure time: 72 h

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	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..

12.6 Endocrine disrupting properties

Product:

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.

12.7 Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

14.1 UN number or ID number

ADR	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (bis[2-[2-(1-methylethyl)-3-oxazolidinyl]ethyl] hexane-1,2-diylbiscarbamate)

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADR	:	9	
IMDG	:	9	
IATA	:	9	

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964

Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADR

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes

IATA (Passenger)

Environmentally hazardous	:	yes

IATA (Cargo)

Environmentally hazardous	:	yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Not applicable
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable

UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation	:	Not applicable
Control of Major Accident Hazards Regulations 2015 (COMAH)	E2	ENVIRONMENTAL HAZARDS
Volatile organic compounds	:	Law on the incentive tax for volatile organic compounds (VOCV) no VOC duties Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Not applicable

If other regulatory information applies that is not already provided elsewhere in the Safety Data Sheet, then it is described in this subsection.

Health, safety and environmental regulation/legislation specific for the substance or mixture:	:	Environmental Protection Act 1990 & Subsidiary Regulations Health and Safety at Work Act 1974 & Subsidiary Regulations Control of Substances Hazardous to Health Regulations (COSHH) May be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments.

15.2 Chemical safety assessment

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

SECTION 16: Other information

Full text of other abbreviations

ADR	:	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	:	Chemical Abstracts Service
DNEL	:	Derived no-effect level
EC50	:	Half maximal effective concentration
GHS	:	Globally Harmonized System
IATA	:	International Air Transport Association
IMDG	:	International Maritime Code for Dangerous Goods
LD50	:	Median lethal dosis (the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals)
LC50	:	Median lethal concentration (concentrations of the chemical in air that kills 50% of the test animals during the observation period)
MARPOL	:	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978

OEL	:	Occupational Exposure Limit
PBT	:	Persistent, bioaccumulative and toxic
PNEC	:	Predicted no effect concentration
REACH	:	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency
SVHC	:	Substances of Very High Concern
vPvB	:	Very persistent and very bioaccumulative

Further information

The information contained in this Safety Data Sheet corresponds to our level of knowledge at the time of publication. All warranties are excluded. Our most current General Sales Conditions shall apply. Please consult the product data sheet prior to any use and processing.

Changes as compared to previous version !

GB / EN

Annex to the extended safety data sheet (eSDS)

1. Overview of exposure scenarios (ES)

ES number	ES Code	Scenario name	Use descriptor	Page
1	1	Industrial manufacture of the substance	ERC 1; PROC 1, 2, 3, 4, 8B, 9	15
2	2	Formulation of sealants and adhesives	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	23
3	3	Formulation of coatings and fillers	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	33
4	4	Formulation of polymer preparations	ERC 3; PROC 2, 3, 4, 5, 8A, 9	42
5	5	Industrial application of sealants and adhesives	ERC 5; PROC 5, 7, 8B, 10, 14	51
6	6	Industrial application of coatings and fillers	ERC 5; PROC 5, 7, 8B, 10, 13	59
7	7	Professional application of sealants and adhesives (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 14	67
8	8	Professional application of sealants and adhesives (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 14	75
9	9	Professional application of coatings and fillers (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 13	82
10	10	Professional application of coatings and fillers (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 13	89
11	11	Consumer use of sealants and adhesives (indoor)	ERC 8C; PC 1	96

ES number	ES Code	Scenario name	Use descriptor	Page
12	12	Consumer use of sealants and adhesives (outdoor)	ERC 8F; PC 1	102
13	13	Consumer use of coatings and fillers (indoor)	ERC 8C; PC 9a, 9b	108
14	14	Consumer use of coatings and fillers (outdoor)	ERC 8F; PC 9a, 9b	113

1.1 General information

Qualitative risk assessment
Consideration of hydrolysis products within risk assessment of Incozol 4

2.1 Scenario 1: Industrial manufacture of the substance (1)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 1

Free short title	Industrial manufacture of the substance (1)
Systematic title based on use descriptor	ERC 1; PROC 1, 2, 3, 4, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

2.2 Conditions of use affecting exposure

2.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 1

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,090.909 kg/day
Release times per year	220 days/year *(justification: Release times per year)*

Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	5 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0.010 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
No direct discharge to marine water compartment *(justification: No direct discharge to marine water compartment.)*	
Other modified EUSES values	
Concentration in untreated wastewater (Clocal inf.)	0 mg/L *(justification: All waste water (aqueous and organic phase) will be sent to disposal companies.)*
Fraction released to waste water (Femis.water)	0 % *(justification: All waste water will be sent to disposal companies. Local STP will not get any waste.)*
Fraction of emission directed to water by local STP (Fstp.water)	0 - *(justification: All waste water will be sent to disposal companies. Local STP will not get any waste.)*
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*
Sludge to agricultural soil ? (SludgeToSoil?)	0 (no) *(justification: The organic and aqueous phases are blended within certain chemical and physical parameters, prior to being incinerated at a High Temperature Scrubbed Incineration facility. Therefore no sludge will be deposited to agricultural soil.)*

2.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)

Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.3 Exposure estimation

2.3.1 Contributing Scenario (1) controlling environmental exposure for ERC1
Industrial manufacture of the substance

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

2.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.24E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.49E10

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.57E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.51E11

2.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.105248 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.803418	4,209.645

2.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.006857 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.000411
inhalation, longterm systemic	0.202769 mg/m^3	29.4 mg/m^3	0.006897
Combined routes	0.035824 mg/kg_{bw}/day	-	0.007308

2.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.016424
inhalation, longterm systemic	2.028 mg/m^3	29.4 mg/m^3	0.068969
Combined routes	0.563955 mg/kg_{bw}/day	-	0.085393

2.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.426813 mg/kg$_{bw}$/day	-	0.077181

2.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

2.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

2.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

3.1 Scenario 2: Formulation of sealants and adhesives (2)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 2

Free short title	Formulation of sealants and adhesives (2)
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

3.2 Conditions of use affecting exposure

3.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,090.909 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	

SpERC	SpERC in accordance with FEICA SPERC 2.1c.v2 ("Formulation of Solvent Borne Adhesives – Volatiles (Small Scale, < 1000 t/a)") and the correspondent SpERC Fact Sheet (Reference: Date February 2013) provided by the association FEICA. Remark: The FEICA SPERC 2.1c.v2 with the above-mentioned parameters/release fractions covers the FEICA SPERC 2.1b.v2, that has a lower release fraction to air.
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

3.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.3 Exposure estimation

3.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

3.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.24E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.49E10
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.57E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.51E11

3.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.075829 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.578851	5,843.47

3.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.274286 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.016424
inhalation, longterm systemic	2.028 mg/m^3	29.4 mg/m^3	0.068969
Combined routes	0.563955 mg/kg_{bw}/day	-	0.085393

3.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.426813 mg/kg$_{bw}$/day	-	0.077181

3.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

3.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

3.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

3.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

3.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

4.1 Scenario 3: Formulation of coatings and fillers (3)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 3

Free short title	Formulation of coatings and fillers (3)
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

4.2 Conditions of use affecting exposure

4.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,000 kg/day
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.600 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %

Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
Reduction of sludge to soil	100 % *(justification: Incineration of sludge)*
SpERC	SpERC in accordance with CEPE SPERC 2.1b.v1 ("- formulation - organic solvent borne coatings and inks - small scale (<1,000 tpa solvent use) - volatiles") and the correspondent SpERC Fact Sheet (Reference: AJN/ajns0319b, Date: 16 October 2010) provided by the association CEPE. Remark: The CEPE SPERC 2.1b.v1 with the above-mentioned parameters/release fractions covers the CEPE SPERC 2.1a.v2.
No direct discharge to marine water compartment	
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

4.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors

Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	

Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial

Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	

Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial

Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.3 Exposure estimation

4.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

4.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.04E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.35E10
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.49E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.45E11

4.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.01279 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.097637	3.39E4

4.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.016424
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.563955 mg/kg$_{bw}$/day	-	0.085393

4.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.426813 mg/kg$_{bw}$/day	-	0.077181

4.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

4.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

4.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

4.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

4.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

5.1 Scenario 4: Formulation of polymer preparations (4)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 4

Free short title	Formulation of polymer preparations (4)
Systematic title based on use descriptor	ERC 3; PROC 2, 3, 4, 5, 8A, 9
Name of constributing environmental scenario and corresponding ERC	ERC 3 Formulation in articles
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

5.2 Conditions of use affecting exposure

5.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 3

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,090.909 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	SpERC in accordance with formulation SpERCs provided by CEPE (CEPE SPERC 2.1b.v1 (Reference: AJN/ajns0319b, Date: 16 October 2010)) and FEICA (FEICA SPERC 2.1c.v2 (Reference: Reference Date February 2013))
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

5.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.3 Exposure estimation

5.3.1 Contributing Scenario (1) controlling environmental exposure for ERC3
Formulation of polymer preparations

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

5.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.24E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.49E10
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.57E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.51E11

5.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.075829 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.578851	5,843.47

5.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.016424
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.563955 mg/kg$_{bw}$/day	-	0.085393

5.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	0.426813 mg/kg$_{bw}$/day	-	0.077181

5.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

5.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

5.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

5.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8A
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	3.033 mg/kg$_{bw}$/day	-	0.233212

5.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic	2.028 mg/m³	29.4 mg/m³	0.068969
Combined routes	1.661 mg/kg$_{bw}$/day	-	0.15109

6.1 Scenario 5: Industrial application of sealants and adhesives (5)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 5

Free short title	Industrial application of sealants and adhesives (5)
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 14
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

6.2 Conditions of use affecting exposure

6.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,090.909 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	1.7 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	SpERC in accordance with FEICA SPERC 5.1b.v2 (“Industrial Use of Substances other than Solvents in Transportation (Automotive/aircraft/rail vehicles) / industrial Building Construction Adhesives”) and the correspondent SpERC Fact Sheet (Reference: Date February 2013) provided by the association FEICA. Remark: The FEICA SPERC 5.1b.v2 with the above-mentioned parameters/release fractions covers the FEICA SPERC 5.1a.v2, that has identical release fraction to air.
No direct discharge to marine water compartment	
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

6.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid

Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

6.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid

Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

6.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

6.3 Exposure estimation

6.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

6.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.24E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.49E10
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.57E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.51E11

6.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.035905 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.274082	1.23E4

6.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.405538 mg/m^3	29.4 mg/m^3	0.013794
Combined routes	0.606505 mg/kg_{bw}/day	-	0.046642

6.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total expo-

sure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.102652
inhalation, longterm systemic	20.277 mg/m³	29.4 mg/m³	0.68969
Combined routes	4.611 mg/kg$_{bw}$/day	-	0.792342

6.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.102652
inhalation, longterm systemic	24.332 mg/m³	29.4 mg/m³	0.827628
Combined routes	5.19 mg/kg$_{bw}$/day	-	0.93028

6.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.405538 mg/m³	29.4 mg/m³	0.013794
Combined routes	0.606505 mg/kg$_{bw}$/day	-	0.046642

6.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	1.383 mg/kg$_{bw}$/day	-	0.133724

6.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 14
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	0.405538 mg/m³	29.4 mg/m³	0.013794
Combined routes	0.195077 mg/kg$_{bw}$/day	-	0.022006

7.1 Scenario 6: Industrial application of coatings and fillers (6)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 6

Free short title	Industrial application of coatings and fillers (6)
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 13
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring

7.2 Conditions of use affecting exposure

7.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	900 to/year
Daily amount used at site	4,000 kg/day
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	2 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	no
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	CEPE SPERC 5.1a.v1 - CEPE - application - industrial - spraying - indoor use - solids
No direct discharge to marine water compartment	
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

7.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

7.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

7.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

7.3 Exposure estimation

7.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

7.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	8.23E-9 mg/L	0.0186 mg/L	4.43E-7	9.04E9
Freshwater sediment	4.47E-8 mg/kg_{dwt}	0.709 mg/kg_{dwt}	6.30E-8	6.35E10
Marine water	2.13E-10 mg/L	0.00186 mg/L	1.15E-7	3.49E10
Marine water sediment	1.16E-9 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	1.63E-8	2.45E11

7.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.042209 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.322203	1.03E4

7.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.405538 mg/m^3	29.4 mg/m^3	0.013794
Combined routes	0.606505 mg/kg_{bw}/day	-	0.046642

7.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.102652
inhalation, longterm systemic	20.277 mg/m³	29.4 mg/m³	0.68969
Combined routes	4.611 mg/kg$_{bw}$/day	-	0.792342

7.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.102652
inhalation, longterm systemic	24.332 mg/m³	29.4 mg/m³	0.827628
Combined routes	5.19 mg/kg$_{bw}$/day	-	0.93028

7.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.405538 mg/m³	29.4 mg/m³	0.013794

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
Combined routes	0.606505 mg/kg$_{bw}$/day	-	0.046642

7.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	1.383 mg/kg$_{bw}$/day	-	0.133724

7.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 13
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.405538 mg/m³	29.4 mg/m³	0.013794
Combined routes	0.606505 mg/kg$_{bw}$/day	-	0.046642

8.1 Scenario 7: Professional application of sealants and adhesives (indoor) (7)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 7

Free short title	Professional application of sealants and adhesives (indoor) (7)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 14
Name of contributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

8.2 Conditions of use affecting exposure

8.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

8.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

8.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	

Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

8.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no

Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

8.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

8.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid

Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

8.3 Exposure estimation

8.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

8.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

8.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

8.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

8.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.283876 mg/m^3	29.4 mg/m^3	0.009656
Combined routes	0.589125 mg/kg_{bw}/day	-	0.042504

8.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.283876 mg/m^3	29.4 mg/m^3	0.009656
Combined routes	0.589125 mg/kg_{bw}/day	-	0.042504

8.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	1.383 mg/kg$_{bw}$/day	-	0.133724

8.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.128315
inhalation, longterm systemic	24.332 mg/m³	29.4 mg/m³	0.827628
Combined routes	5.619 mg/kg$_{bw}$/day	-	0.955943

8.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.177697 mg/kg$_{bw}$/day	-	0.017868

9.1 Scenario 8: Professional application of sealants and adhesives (outdoor) (8)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 8

Free short title	Professional application of sealants and adhesives (outdoor) (8)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 14
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

9.2 Conditions of use affecting exposure

9.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %

Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

9.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

9.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

9.3 Exposure estimation

9.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

9.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

9.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

9.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.283876 mg/m^3	29.4 mg/m^3	0.009656
Combined routes	0.589125 mg/kg_{bw}/day	-	0.042504

9.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

9.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .)	1.2 mg/m³	29.4 mg/m³	0.040816
Combined routes	1.269 mg/kg$_{bw}$/day	-	0.106514

9.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	17.033 mg/m³	29.4 mg/m³	0.57934
Combined routes	6.719 mg/kg$_{bw}$/day	-	0.835969

9.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.177697 mg/kg$_{bw}$/day	-	0.017868

10.1 Scenario 9: Professional application of coatings and fillers (indoor) (9)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 9

Free short title	Professional application of coatings and fillers (indoor) (9)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

10.2 Conditions of use affecting exposure

10.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year

Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

10.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

10.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

10.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	

Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

10.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2

Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 10 90 %
Respiratory protection	90 %

10.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Ventilation	good (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

10.3 Exposure estimation

10.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

10.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

10.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

10.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.548571 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.032849
inhalation, longterm systemic	0.283876 mg/m^3	29.4 mg/m^3	0.009656

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

10.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

10.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	1.383 mg/kg$_{bw}$/day	-	0.133724

10.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.128315
inhalation, longterm systemic	24.332 mg/m³	29.4 mg/m³	0.827628
Combined routes	5.619 mg/kg$_{bw}$/day	-	0.955943

10.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

11.1 Scenario 10: Professional application of coatings and fillers (outdoor) (10)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 10

Free short title	Professional application of coatings and fillers (outdoor) (10)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

11.2 Conditions of use affecting exposure

11.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

11.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	

Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

11.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)

Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

11.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .

11.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Qualitative Risk Assessment	

Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

11.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Qualitative Risk Assessment	
Eyes	Use suitable eye protection.
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	negligible
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	

Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

11.3 Exposure estimation

11.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

11.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

11.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

11.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

11.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

11.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

11.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.097 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.065697
inhalation, longterm systemic (measured /	1.2 mg/m³	29.4 mg/m³	0.040816

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
external: Inhalation exposure was estimated using ART version 1.5. For more details, please refer to Annex I .)			
Combined routes	1.269 mg/kg$_{bw}$/day	-	0.106514

11.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	17.033 mg/m³	29.4 mg/m³	0.57934
Combined routes	6.719 mg/kg$_{bw}$/day	-	0.835969

11.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.548571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.032849
inhalation, longterm systemic	0.283876 mg/m³	29.4 mg/m³	0.009656
Combined routes	0.589125 mg/kg$_{bw}$/day	-	0.042504

12.1 Scenario 11: Consumer use of sealants and adhesives (indoor) (11)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 11

Free short title	Consumer use of sealants and adhesives (indoor) (11)
Systematic title based on use descriptor	ERC 8C; PC 1
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

12.2 Conditions of use affecting exposure

12.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

12.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	

Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	120 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	0.600 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	

Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	1.73E6 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Joint and assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	

Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	1,800 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	2 cm^2
Contact rate	50 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.3 Exposure estimation

12.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Consumer use of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk As-

sessment Spreadsheet Model 1.24a.

12.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

12.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

12.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

12.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.018265 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.002201
inhalation longterm systemic (Mean concentration yearly)	0.000026 mg/m^3	6.25 mg/m^3	4.12E-6
oral	-	-	-
Combined routes	0.018266 mg/kg_{bw}/day	-	0.002205

12.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	7.89 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.950652
inhalation longterm systemic (Mean concentration yearly)	0.00009 mg/m^3	6.25 mg/m^3	0.000014
oral	-	-	-
Combined routes	7.89 mg/kg$_{bw}$/day	-	0.950666

12.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Joint and assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.013699 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.00165
inhalation longterm systemic (Mean concentration yearly)	0.000026 mg/m^3	6.25 mg/m^3	4.14E-6
oral	-	-	-
Combined routes	0.013703 mg/kg$_{bw}$/day	-	0.001655

13.1 Scenario 12: Consumer use of sealants and adhesives (outdoor) (12)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 12

Free short title	Consumer use of sealants and adhesives (outdoor) (12)
Systematic title based on use descriptor	ERC 8F; PC 1

Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

13.2 Conditions of use affecting exposure

13.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

13.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year

Exposure time	120 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	0.600 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min

Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	1.73E6 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Joint and assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min

Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	1,800 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	2 cm^2
Contact rate	50 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.3 Exposure estimation

13.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

13.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

13.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

13.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

13.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.018265 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.002201
inhalation longterm systemic (Mean concentration yearly)	0.000026 mg/m^3	6.25 mg/m^3	4.12E-6
oral	-	-	-
Combined routes	0.018266 mg/kg_{bw}/day	-	0.002205

13.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	7.89 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.950652
inhalation longterm systemic (Mean concentration yearly)	0.00009 mg/m^3	6.25 mg/m³	0.000014
oral	-	-	-
Combined routes	7.89 mg/kg$_{bw}$/day	-	0.950666

13.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Joint and assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.013699 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.00165
inhalation longterm systemic (Mean concentration yearly)	0.000026 mg/m^3	6.25 mg/m³	4.14E-6
oral	-	-	-
Combined routes	0.013703 mg/kg$_{bw}$/day	-	0.001655

14.1 Scenario 13: Consumer use of coatings and fillers (indoor) (13)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 13

Free short title	Consumer use of coatings and fillers (indoor) (13)
Systematic title based on use descriptor	ERC 8C; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix

Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

14.2 Conditions of use affecting exposure

14.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

14.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	

Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.250 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	34 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.50E5 cm^2
Release temperature	15 °C
Dermal	
Uptake fraction	100 %

14.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	3 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic

Frequency of use	3 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.050 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	200 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

14.3 Exposure estimation

14.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Consumer use of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

14.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg_{dwt}	0.709 mg/kg_{dwt}	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Marine water sediment	0.000079 mg/kg_{dwt}	0.0709 mg/kg_{dwt}	0.001115	442.414

14.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000203 mg/kg_{dwt}	0.131 mg/kg_{dwt}	0.001553	346.774

14.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

14.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (indoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.002283 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.000275
inhalation longterm systemic (Mean concentration yearly)	0.000093 mg/m^3	6.25 mg/m^3	0.000015
oral	-	-	-
Combined routes	0.0023 mg/kg_{bw}/day	-	0.00029

14.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (indoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total

exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.00137 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.000165
inhalation longterm systemic (Mean concentration yearly)	0.000258 mg/m^3	6.25 mg/m^3	0.000041
oral	-	-	-
Combined routes	0.001417 mg/kg_{bw}/day	-	0.000206

15.1 Scenario 14: Consumer use of coatings and fillers (outdoor) (14)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 14

Free short title	Consumer use of coatings and fillers (outdoor) (14)
Systematic title based on use descriptor	ERC 8F; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

15.2 Conditions of use affecting exposure

15.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	900 to/year
Daily amount used at site	0.493151 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes

River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Rate constant hydrolysis in water at env. temp (khydr.water)	263.15 d-1 *(justification: Calculated rate constant hydrolysis in water at environmental relevant temperature (12 °C) on the basis of experimental measurements.)*

15.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.250 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	34 m^3
Ventilation rate	1.5 1/h
Release are is constant	

Release area	1.50E5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	3 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	3 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.050 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	200 cm^2

Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.3 Exposure estimation

15.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

15.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	0.000146 mg/L	0.0186 mg/L	0.007828	62.995
Freshwater sediment	0.00079 mg/kg$_{dwt}$	0.709 mg/kg$_{dwt}$	0.001115	442.396
Marine water	0.000015 mg/L	0.00186 mg/L	0.007828	62.998
Marine water sediment	0.000079 mg/kg$_{dwt}$	0.0709 mg/kg$_{dwt}$	0.001115	442.414

15.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	0.000203 mg/kg$_{dwt}$	0.131 mg/kg$_{dwt}$	0.001553	346.774

15.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
STP	0.001456 mg/L	89.4 mg/L	0.000016	3.03E4

15.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (outdoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.002283 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.000275
inhalation longterm systemic (Mean concentration yearly)	0.000093 mg/m^3	6.25 mg/m^3	0.000015
oral	-	-	-
Combined routes	0.0023 mg/kg_{bw}/day	-	0.00029

15.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (outdoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.00137 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.000165
inhalation longterm systemic (Mean concentration yearly)	0.000258 mg/m^3	6.25 mg/m^3	0.000041
oral	-	-	-
Combined routes	0.001417 mg/kg_{bw}/day	-	0.000206

Annex I Art report

ART REPORT – PROC 10 Roller application or brushing-indoor
Incozol 4

Details for Activity PROC 10

Emission sources: Near field **X**
Far field

Duration (mins): 480

Near-field exposure

Operational Conditions

Substance emission potential	
Substance product type	Liquids
Process temperature	Room temperature
Vapour pressure	0.0005 Pa
Liquid weight fraction	0.2
Viscosity	Low
Activity emission potential	
Activity class	Spreading of liquid products
Situation	Spreading of liquids at surfaces or work pieces > 3 m² / hour
Surface contamination	
Process fully enclosed?	No
Effective housekeeping practices in place?	Yes
Dispersion	
Work area	Indoors
Room size	30 m³

Risk Management Measures

Localised controls	
Primary	No localized controls (0.00 % reduction)
Secondary	No localized controls (0.00 % reduction)
Dispersion	
Ventilation rate	3 air changes per hour (ACH)

Predicted exposure levels

ART predicts air concentrations in a worker's personal breathing zone outside of any Respiratory Protection Equipment (RPE). The use of RPE must be considered separately.

Mechanistic model results

The predicted 75th percentile full-shift exposure is 0.93 mg/m³.

The inter-quartile confidence interval is 0.44 mg/m³ to 2 mg/m³.

ART REPORT – PROC 10 Roller application or brushing-outdoor
Incozol 4
Details for Activity PROC 10

Emission sources: Near field **X**
Far field

Duration (mins): 480

Near-field exposure

Operational Conditions

Substance emission potential	
Substance product type	Liquids
Process temperature	Room temperature
Vapour pressure	0.0005 Pa
Liquid weight fraction	0.2
Viscosity	Low
Activity emission potential	
Activity class	Spreading of liquid products
Situation	Spreading of liquids at surfaces or work pieces > 3 m² / hour
Surface contamination	
Process fully enclosed?	No
Effective housekeeping practices in place?	Yes
Dispersion	
Work area	Outdoors
Source located close to buildings?	Yes

Risk Management Measures

Localised controls	
Primary	No localized controls (0.00 % reduction)
Secondary	No localized controls (0.00 % reduction)

Predicted exposure levels

ART predicts air concentrations in a worker's personal breathing zone outside of any Respiratory Protection Equipment (RPE). The use of RPE must be considered separately.

Mechanistic model results

The predicted 75th percentile full-shift exposure is 0.52 mg/m³.

The inter-quartile confidence interval is 0.23 mg/m³ to 1.2 mg/m³.

Incozol 4