Eastman NPG(TM) Glycol Platelets

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3.6	06.10.2020	150000000146	Date of first issue: 04.02.2011
PRD		SDSEU / EN / 0001	

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

1.1 Product identifier

Trade name	:	Eastman NPG(TM) Glycol Platelets
Product code	:	02049-00, P0204901, P0204904, P0204906, P0204910, P0204905, P0204912, E0204901, P0204917
REACH Registration Number	:	01-2119480396-30-0002
Substance name	:	2,2-dimethyl-1,3-propanediol
EC-No.	:	204-781-0

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

Use of the Substance/Mixture	:	Please refer to the Annex for a listing of uses. Chemical intermediate
Recommended restrictions on use	:	None known.

1.3 Details of the supplier of the safety data sheet

Company	:	Eastman Chemical Company 200 South Wilcox Drive 37660-5280 Kingsport
Telephone	:	+14232292000
E-mail address of person responsible for the SDS	:	Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

1.4 Emergency telephone

NCEC +44 (0)1235 239 670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Serious eye damage, Category 1	H318: Causes serious eye damage.

2.2 Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H318 Causes serious eye damage.

Precautionary Statements : **Prevention:**

P280 Wear eye protection/ face protection.

Response:

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

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.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : 2,2-dimethyl-1,3-propanediol

EC-No. : 204-781-0

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
2,2-dimethyl-1,3-propanediol	126-30-7 204-781-0	100

SECTION 4: First aid measures

4.1 Description of first-aid measures

If inhaled : Move to fresh air.
Treat symptomatically.
If symptoms persist, call a physician.

In case of skin contact : Wash off with soap and water.
If symptoms persist, call a physician.

In case of eye contact	:	Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
If swallowed	:	Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Risks	:	Causes serious eye damage.

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	:	Carbon dioxide (CO2) Dry chemical Water spray
Unsuitable extinguishing media	:	Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	None known.
Hazardous combustion products	:	No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.
Further information	:	None known.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

6.2 Environmental precautions

Environmental precautions	:	Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Sweep up or vacuum up spillage and collect in suitable container for disposal.

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not get in eyes.
Wash thoroughly after handling.

Advice on protection against fire and explosion : None known.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

Dust explosion class : St2

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep tightly closed.

7.3 Specific end use(s)

Specific use(s) : Chemical intermediate

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

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

Substance name	End Use	Routes of exposure	Potential health effects	Value
2,2-dimethyl-1,3-propanediol	Workers	Skin contact	Long-term exposure, Systemic effects	5 mg/kg bw/day
	Workers	Inhalation	Long-term exposure, Systemic effects	8,7 mg/m3
	General Population	Oral	Short-term exposure, Systemic effects	80 mg/kg bw/day
	General Population	Skin contact	Long-term exposure, Systemic effects	2,5 mg/kg bw/day
	General Population	Inhalation	Long-term exposure, Systemic effects	2,9 mg/m3
	General Population	Oral	Long-term exposure, Systemic effects	1,25 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
2,2-dimethyl-1,3-propanediol	Fresh water	5 mg/l
	Marine water	0,5 mg/l
	Aqua Intermittent	5 mg/l
	Fresh water sediment	18,5 mg/kg
	Marine sediment	1,85 mg/kg
	Soil	0,764 mg/kg
	Sewage treatment plant	20 mg/l

8.2 Exposure controls

Engineering measures
Ensure adequate ventilation.

Personal protective equipment

Eye protection : Wear safety glasses with side shields (or goggles).
Face-shield
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Hand protection

Remarks : Wear suitable gloves.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.
Ensure that eye flushing systems and safety showers are located close to the working place.
Use personal protective equipment as required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : crystalline

Color : white

Odor : sweet

Odor Threshold : not determined

pH : Not applicable

Melting point/range : 127 °C

Boiling point/boiling range : 209 °C (1.013 hPa)

Flash point	:	Not applicable
Evaporation rate	:	not determined
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapor pressure	:	0,00024 hPa (20 °C)
Relative vapor density	:	3,6
Relative density	:	1,07 (20 °C)
Solubility(ies)		
Water solubility	:	830 g/l (20 °C)
Partition coefficient: n-octanol/water	:	log Pow: -0,15 (25 °C)
Autoignition temperature	:	not determined
Decomposition temperature	:	255 °C
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified

9.2 Other information

Molecular weight	:	104,2 g/mol
Dust explosion class	:	St2
Minimum ignition energy	:	< 3 - 5 mJ
Self-ignition	:	399 °C

SECTION 10: Stability and reactivity

10.1 Reactivity

None reasonably foreseeable.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents

10.6 Hazardous decomposition products

Carbon dioxide (CO2)
Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

2,2-dimethyl-1,3-propanediol:

Acute oral toxicity : LD50 Oral (Rat): 6.920 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 140 mg/l
Exposure time: 8 h

Acute dermal toxicity : LD50 Dermal (Guinea pig): > 4.000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Product:

Remarks : No data available

Components:

2,2-dimethyl-1,3-propanediol:

Species : Rabbit
Exposure time : 4 h
Result : none

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks : Causes serious eye damage.

Components:

2,2-dimethyl-1,3-propanediol:

Species : Rabbit
Exposure time : 24 h
Result : Corrosive

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Remarks : No data available

Components:

2,2-dimethyl-1,3-propanediol:

Test Type : Skin Sensitization
Species : Mouse
Result : non-sensitizing

Germ cell mutagenicity

Not classified based on available information.

Components:

2,2-dimethyl-1,3-propanediol:

Genotoxicity in vitro : Test Type: Mutagenicity - Bacterial
Metabolic activation: +/- activation
Result: negative

Test Type: Mutagenicity - Mammalian
Metabolic activation: +/- activation
Result: negative
Remarks: Read-across from a similar material

Carcinogenicity

Not classified based on available information.

Product:

Remarks : This information is not available.

Reproductive toxicity

Not classified based on available information.

Product:

Effects on fertility : Remarks: No data available

STOT-single exposure

Not classified based on available information.

Product:

Remarks : No data available

STOT-repeated exposure

Not classified based on available information.

Product:

Remarks : No data available

Repeated dose toxicity

Components:

2,2-dimethyl-1,3-propanediol:

Species	:	Rat, male
NOAEL	:	300 mg/kg
Application Route	:	by gavage
Exposure time	:	45 d
Target Organs	:	Kidney

Species	:	Rat, female
NOAEL	:	1.000 mg/kg
Application Route	:	by gavage
Exposure time	:	50 - 53 d
Remarks	:	(highest dose tested)

Aspiration toxicity

Not classified based on available information.

Product:
No data available

Information on likely routes of exposure

Product:

Inhalation	:	Remarks: None known.
Skin contact	:	Remarks: None known.
Eye contact	:	Remarks: Causes serious eye damage.
Ingestion	:	Remarks: None known.

Further information

Product:

Remarks	:	None known.

SECTION 12: Ecological information

12.1 Toxicity

Components:

2,2-dimethyl-1,3-propanediol:

Toxicity to fish	:	LC50 (Fish): > 10.000 mg/l Exposure time: 48 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (daphnid): > 500 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	EC50 (Chlorella pyrenoidosa (aglae)): > 500 mg/l Exposure time: 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC:: > 1.000 mg/l Exposure time: 21 d Species: daphnid

12.2 Persistence and degradability

Components:

2,2-dimethyl-1,3-propanediol:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: > 70 % Exposure time: 28 d Method: Ready Biodegradability: CO2 Evolution Test

12.3 Bioaccumulative potential

Components:

2,2-dimethyl-1,3-propanediol:

Bioaccumulation	:	Bioconcentration factor (BCF): < 9
Partition coefficient: n-octanol/water	:	Pow: 1,32 log Pow: 0,12

12.4 Mobility in soil

Components:

2,2-dimethyl-1,3-propanediol:

Distribution among environmental compartments	:	log Koc: 1 Method: QSAR model

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 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Candidate List of Substances of Very High Concern for Authorization (Article 59). : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

The ingredients of this product are reported in the following inventories:

DSL	:	On the inventory, or in compliance with the inventory
AICS	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory

15.2 Chemical Safety Assessment

YES

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

ZW / EN

Annex

Eastman NPG(TM) Glycol Platelets

150000000146

Contents:

Summary

	Process categories	Product category(ies)	Sector(s) of use	Article (sub) category(ies)	Environmental release category(ies)
Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container)., Use as an intermediate	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC15		SU3 SU8 SU9		ERC1 ERC6a ERC6c ERC6d
Distribution of substance	PROC1 PROC2 PROC3 PROC5 PROC8a PROC8b PROC9 PROC15		SU8 SU9 SU10		ERC2
Formulation & (re)packing of substances and mixtures	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC15		SU10		ERC2
Use of a construction chemical., Industrial use	PROC10 PROC13 PROC14		SU3 SU19		ERC5
Use of a construction chemical., Professional use	PROC10 PROC11 PROC13 PROC19		SU22		ERC8c, ERC8f
Use of a construction chemical., Consumer use		PC1, PC9	SU21	AC4	ERC10a ERC11a
Use of small quantities within laboratory settings within enclosed or contained systems, including incidental	PROC15		SU22		ERC8a

exposures during material transfers and equipment cleaning., Professional use					

Exposure scenario I. Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container)., Use as an intermediate

Section 1: Exposure scenario

Sector(s) of use	SU3: Industrial Manufacturing (all) SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals

List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC9. PROC15.

Name of contributing environmental scenario and corresponding ERC	ERC1 ERC6a ERC6c ERC6d

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, low dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Bulk transfers, internal:	Use suitable eye protection and gloves.
Mixing operations (closed systems), Batch process:	Use suitable eye protection and gloves.
Equipment maintenance:	Use suitable eye protection and gloves.
Bulk transfers, transport:	Use suitable eye protection and gloves.
Drum and small package filling:	Use suitable eye protection and gloves.
Laboratory activities, Pouring from small containers:	No other specific measures identified.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC1: Manufacture of substances

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year
Amounts used: Fraction of regional tonnage used locally	1,12

Msafe	Annual amount per site: 9.520 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	300	0,001 %	0,01 %	1 %	ESVOC spERC 1.1.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year

Amounts used: Fraction of regional tonnage used locally	1,12

Msafe	Annual amount per site: 9.520 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	Emission days	Emission or release factors to the relevant compartments			Remarks
		Air	Soil	Water	
Continuous release	300	0 %	0,1 %	1 %	ESVOC spERC 6.1a.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

ERC6c: Industrial use of monomers for manufacture of thermoplastics

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year

Msafe	Annual amount per site: 9.520 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	Emission days	Emission or release factors to the relevant compartments			Remarks
		Air	Soil	Water	
Continuous release	300	0,001 %	0 %	1 %	Solid, low dustiness

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year

Msafe	Annual amount per site: 9.520 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	300	0,001 %	0 %	1 %	Solid, low dustiness

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,07	ECETOC TRA worker v3	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process, with sample collection*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,274	ECETOC TRA worker v3	
combined routes		0,275	ECETOC TRA worker v3	

PROC3: Use in closed batch process (synthesis or formulation) *Process sampling*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,1 mg/m³	0,012	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,081	ECETOC TRA worker v3	

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises *Bulk transfers, internal*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) *Mixing operations (closed systems), Batch process*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities *Equipment maintenance*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities *Bulk transfers, transport*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) *Drum and small package filling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,28	ECETOC TRA worker v3	

PROC15: Use as laboratory reagent *Laboratory activities, Pouring from small containers*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,07	ECETOC TRA worker v3	
combined routes		0,08	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC1: Manufacture of substances

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,399	EUSES	
Marine water	0,199 mg/l	0,399	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,399	EUSES	

Marine sediment	0,16 mg/kg wwt	0,399	EUSES	
Soil	0,0351 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,997	EUSES	

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,399	EUSES	
Marine water	0,199 mg/l	0,399	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,399	EUSES	
Marine sediment	0,16 mg/kg wwt	0,399	EUSES	
Soil	0,035 mg/kg wwt	0,52	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,997	EUSES	

ERC6c: Industrial use of monomers for manufacture of thermoplastics

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,399	EUSES	
Marine water	0,199 mg/l	0,399	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,399	EUSES	
Marine sediment	0,16 mg/kg wwt	0,399	EUSES	
Soil	0,035 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,997	EUSES	

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,399	EUSES	
Marine water	0,199 mg/l	0,399	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,399	EUSES	
Marine sediment	0,16 mg/kg wwt	0,399	EUSES	
Soil	0,035 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,997	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river

msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario II. Distribution of substance

Section 1: Exposure scenario

Sector(s) of use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU10: Formulation [mixing] of preparations and/or re-packaging

List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC5. PROC8a. PROC8b. PROC9. PROC15.

Name of contributing environmental scenario and corresponding ERC	ERC2

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, low dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Mixing operations (closed systems), Batch process:	Use suitable eye protection and gloves.
Equipment maintenance:	Use suitable eye protection and gloves.
Bulk transfers, transport:	Use suitable eye protection and gloves.
Drum and small package filling:	Use suitable eye protection and gloves.
Laboratory activities, Pouring from small containers:	No other specific measures identified.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC2: Formulation of preparations

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year
Amounts used: Fraction of regional tonnage used locally	2,2

Msafe	Annual amount per site: 18.870 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	300	0 %	0 %	0,5 %	EFCC spERC 2.1c.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,07	ECETOC TRA worker v3	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process,*

with sample collection

	Exposure level	RCR	Method	Remarks
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,274	ECETOC TRA worker v3	
combined routes		0,275	ECETOC TRA worker v3	

PROC3: Use in closed batch process (synthesis or formulation) *Process sampling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,012	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,081	ECETOC TRA worker v3	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) *Mixing operations (closed systems), Batch process*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities *Equipment maintenance*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities *Bulk transfers, transport*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) *Drum and small package filling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,28	ECETOC TRA worker v3	

PROC15: Use as laboratory reagent *Laboratory activities, Pouring from small containers*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,07	ECETOC TRA worker v3	
combined routes		0,08	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC2: Formulation of preparations

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,398	EUSES	
Marine water	0,199 mg/l	0,398	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,398	EUSES	
Marine sediment	0,16 mg/kg wwt	0,398	EUSES	
Soil	0,035 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,995	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario III. Formulation & (re)packing of substances and mixtures

Section 1: Exposure scenario

Sector(s) of use	SU10: Formulation [mixing] of preparations and/or re-packaging

List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC9. PROC15.

Name of contributing environmental scenario and corresponding ERC	ERC2

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, low dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
General exposures (closed systems), Continuous process, no sampling:	No other specific measures identified.
General exposures (closed systems), Continuous process, with sample collection:	No other specific measures identified.
Process sampling:	No other specific measures identified.
Bulk transfers, internal:	Use suitable eye protection and gloves.
Mixing operations (closed systems), Batch process:	Use suitable eye protection and gloves.
Equipment maintenance:	Use suitable eye protection and gloves.
Material transfers, transport:	Use suitable eye protection and gloves.
Drum and small package filling:	Use suitable eye protection and gloves.
Laboratory activities, Pouring from small containers:	No other specific measures identified.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC2: Formulation of preparations

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year
Amounts used: Fraction of regional tonnage used locally	2,2

Msafe	Annual amount per site: 18.870 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	300	0 %	0 %	0,5 %	EFCC spERC 2.1c.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC1: Use in closed process, no likelihood of exposure *General exposures (closed systems), Continuous process, no sampling*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,07	ECETOC TRA worker v3	

PROC2: Use in closed, continuous process with occasional controlled exposure *General exposures (closed systems), Continuous process,*

with sample collection

	Exposure level	RCR	Method	Remarks
Inhalation	0,01 mg/m³	0,001	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,274	ECETOC TRA worker v3	
combined routes		0,275	ECETOC TRA worker v3	

PROC3: Use in closed batch process (synthesis or formulation) *Process sampling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,012	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,069	ECETOC TRA worker v3	
combined routes		0,081	ECETOC TRA worker v3	

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises *Bulk transfers, internal*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) *Mixing operations (closed systems), Batch process*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities *Equipment maintenance*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,61	ECETOC TRA worker v3	

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities *Material transfers, transport*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) *Drum and small package filling*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,28	ECETOC TRA worker v3	

PROC15: Use as laboratory reagent *Laboratory activities, Pouring from small containers*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	

Dermal	0,34 mg/kg/day	0,07	ECETOC TRA worker v3	
combined routes		0,08	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC2: Formulation of preparations

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,99 mg/l	0,398	EUSES	
Marine water	0,199 mg/l	0,398	EUSES	
Freshwater sediment	1,6 mg/kg wwt	0,398	EUSES	
Marine sediment	0,16 mg/kg wwt	0,398	EUSES	
Soil	0,035 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,9 mg/l	0,995	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario IV. Use of a construction chemical., Industrial use

Section 1: Exposure scenario

Sector(s) of use	SU3: Industrial Manufacturing (all) SU19: Building and construction work

List of names of contributing worker scenarios and corresponding PROCs	PROC10. PROC13. PROC14.

Name of contributing environmental scenario and corresponding ERC	ERC5

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 10 %.

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, high dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
Roller, spreader, flow application:	No other specific measures identified.
Dipping, immersion and pouring:	No other specific measures identified.
Pelletizing:	No other specific measures identified.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC5: Industrial use resulting in inclusion into or onto a matrix

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion)., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	8500 tonnes/year
Amounts used: Fraction of regional tonnage used locally	7,5

Msafe	Annual amount per site: 63.750 tonnes/year

Frequency and duration of use: Continuous process:	300 days/year Continuous release

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	300	0,017 %	0 %	0 %	EFCC spERC 5.1a.v1

Conditions and measures related to sewage treatment plant	
Municipal Sewage Treatment Plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC10: Roller application or brushing *Roller, spreader, flow application*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	1 mg/m³	0,12	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,67	ECETOC TRA worker v3	

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation *Pelletizing*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	1 mg/m³	0,12	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,07	ECETOC TRA worker v3	

combined routes		0,18	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC5: Industrial use resulting in inclusion into or onto a matrix

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,0007 mg/l	0,0001	EUSES	
Marine water	0,00006 mg/l	0,0001	EUSES	
Freshwater sediment	0,0005 mg/kg wwt	0,0001	EUSES	
Marine sediment	0,00005 mg/kg wwt	0,0001	EUSES	
Soil	0,001 mg/kg wwt	0,002	EUSES	
Sewage Treatment Plant	0 mg/l	0	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario V. Use of a construction chemical., Professional use

Section 1: Exposure scenario

Sector(s) of use	SU22: Public domain (administration, education, entertainment, services, craftsmen)

List of names of contributing worker scenarios and corresponding PROCs	PROC10. PROC11. PROC13. PROC19.

Name of contributing environmental scenario and corresponding ERC	ERC8c ERC8f

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 10 %.

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, high dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
Roller, spreader, flow application:	No other specific measures identified.
Spraying, Manual:	Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.
Dipping, immersion and pouring:	No other specific measures identified.
Hand application - fingerpaints, pastels, adhesives:	Avoid carrying out operation for more than 4 hours. Wear suitable gloves tested to EN374.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10

Local marine water dilution factor	100

ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Risk from environmental exposure is driven by wastewater treatment plant microbes., Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	850 tonnes/year
Amounts used: Fraction of regional tonnage used locally	13,5

Msafe	Annual amount per site: 11.475 tonnes/year

Frequency and duration of use: Continuous process:	365 days/year Emission days

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	365	0 %	3,7 %	1 %	EFCC spERC 8c.1a.v1 EFCC spERC 8f.1a.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC10: Roller application or brushing *Roller, spreader, flow application*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	1 mg/m³	0,12	ECETOC TRA worker v3	
Dermal	2,74 mg/kg/day	0,55	ECETOC TRA worker v3	
combined routes		0,67	ECETOC TRA worker v3	

PROC11: Non industrial spraying *Spraying, Manual*

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	4 mg/m³	0,46	ECETOC TRA worker v3	
Dermal	2,14 mg/kg/day	0,43	ECETOC TRA worker v3	
combined routes		0,89	ECETOC TRA worker v3	

PROC13: Treatment of articles by dipping and pouring *Dipping, immersion and pouring*

	Exposure level	RCR	Method	Remarks
Inhalation	0,5 mg/m³	0,06	ECETOC TRA worker v3	
Dermal	1,37 mg/kg/day	0,27	ECETOC TRA worker v3	
combined routes		0,33	ECETOC TRA worker v3	

PROC19: Hand-mixing with intimate contact and only PPE available *Hand application - fingerpaints, pastels, adhesives*

	Exposure level	RCR	Method	Remarks
Inhalation	3 mg/m³	0,35	ECETOC TRA worker v3	
Dermal	2,83 mg/kg/day	0,57	ECETOC TRA worker v3	
combined routes		0,91	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	1,98 mg/l	0,396	EUSES	
Marine water	0,198 mg/l	0,396	EUSES	
Freshwater sediment	1,59 mg/kg wwt	0,396	EUSES	
Marine sediment	0,159 mg/kg wwt	0,396	EUSES	
Soil	0,009 mg/kg wwt	0,052	EUSES	
Sewage Treatment Plant	19,8 mg/l	0,99	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario VI. Use of a construction chemical., Consumer use

Section 1: Exposure scenario

Sector(s) of use	SU21: Private households (=general public = consumers)

List of names of contributing worker scenarios and corresponding PROCs	

Name of contributing environmental scenario and corresponding ERC	ERC10a ERC11a

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 10 %.

2.1. Control of Human Exposure

Name of contributing exposure scenario	Risk Management Measures

PC1, PC9: Adhesives, sealants, Coatings and Paints, Fillers, Putties, Thinners	Risk Management Measures
	Covers concentrations up to10, %
	Covers exposure up toone time per day
	For each use, avoid using for more than10, minutes
	Covers exposure up to240, minutes
	Covers use in room size of 30, m3
	For each use event, avoid using a product amount greater than1, grams
	Covers skin contact area up to1500, cm2

AC4: Stone, plaster, cement, glass and ceramic articles	Risk Management Measures
	Covers concentrations up to10, %
	Covers exposure up toone time per day
	For each use, avoid using for more than10, minutes
	Covers exposure up to240, minutes
	Covers use in room size of 30, m3
	For each use event, avoid using a product amount greater than1, grams
	Covers skin contact area up to1500, cm2

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit	None

release from the site	

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	850 tonnes/year
Amounts used: Fraction of regional tonnage used locally	4,25

Msafe	Annual amount per site: 3.612 tonnes/year

Frequency and duration of use: Continuous process:	365 days/year Emission days

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	365	0,05 %	3,2 %	3,2 %	

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	850 tonnes/year
Amounts used: Fraction of regional tonnage used locally	272

Msafe	Annual amount per site: 231.200

Frequency and duration of use: Continuous process:	365 days/year Emission days

Other given operational conditions affecting environmental exposure

Type:	**Emission days**	**Emission or release factors to the relevant compartments**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	365	0,05 %	0 %	0,05 %	

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal		
Fraction of used amount transferred to external waste treatment		
Suitable waste treatment	**Treatment effectiveness**	**Remarks**
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PC1, PC9: Adhesives, sealants, Coatings and Paints, Fillers, Putties, ThinnersAC4: Stone, plaster, cement, glass and ceramic articles

	Exposure level	**RCR**	**Method**	**Remarks**
Inhalation	0,36 mg/m³	0,12	ConsExpo 1.0.3	
Dermal	1,43 mg/kg/day	0,57	ConsExpo 1.0.3	
Oral	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
combined routes		0,69	ConsExpo 1.0.3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release

Compartment	**PEC**	**Risk characterisation ratio (PEC/PNEC):**	**Method**	**Remarks**
Water	0,0008 mg/l	0,0002	EUSES	
Marine water	0,00008 mg/l	0,0003	EUSES	
Freshwater sediment	0,0006 mg/kg wwt	0,0001	EUSES	
Marine sediment	0,00006 mg/kg wwt	0,003	EUSES	
Soil	0,0023 mg/kg wwt	0,0002	EUSES	

ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

Compartment	**PEC**	**Risk characterisation ratio (PEC/PNEC):**	**Method**	**Remarks**
Water	0,0007 mg/l	0,0001	EUSES	
Marine water	0,00006 mg/l	0,0001	EUSES	
Freshwater sediment	0,0005 mg/kg wwt	0,0001	EUSES	
Marine sediment	0,00005 mg/kg wwt	0,0001	EUSES	
Soil	0,0002 mg/kg wwt	0,0003	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river

Exposure scenario VII. Use of small quantities within laboratory settings within enclosed or contained systems, including incidental exposures during material transfers and equipment cleaning., Professional use

Section 1: Exposure scenario

Sector(s) of use	SU22: Public domain (administration, education, entertainment, services, craftsmen)

List of names of contributing worker scenarios and corresponding PROCs	PROC15.

Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of product:	solid
Vapour pressure:	0,00024 hPa
Process Temperature:	25 °C
Remarks	Not relevant
Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other conditions affecting workers exposure				
Area of use	**Room size**	**Temperature**	**Ventilation rate**	**Remarks**
Covers indoor and outdoor use.	20 m3	25 °C		Solid, low dustiness

Frequency and duration of use	**Duration**	**Frequency of use**	**Remarks**
Exposure time	480 min	5 days/week	

Name of contributing exposure scenario	Risk Management Measures
Laboratory activities, Pouring from small containers:	No other specific measures identified.

2.2.Control of environmental exposure

Risk Management Measures	Note: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Technical measures at process level (source) to prevent release	For further specification, refer to section 8 of the SDS.

Organizational measures to prevent/limit release from the site	None

Environment factors not influenced by risk management	
Flow rate of receiving surface water	18.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

ERC8a: Wide dispersive indoor use of processing aids in open systems

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).
Soil	Soil emission controls are not applicable as there is no direct release to soil.
Water	Prevent environmental discharge consistent with regulatory requirements.

Amounts used: Regional use tonnage	850 tonnes/year
Amounts used: Fraction of regional tonnage used locally	0,125

Msafe	Annual amount per site: 106 tonnes/year

Frequency and duration of use: Continuous process:	365 days/year Emission days

Other given operational conditions affecting environmental exposure

Type:	Emission days	Emission or release factors to the relevant compartments			Remarks
		Air	Soil	Water	
Continuous release	365	50 %	0 %	50 %	ESVOC spERC 8.17.v1

Conditions and measures related to sewage treatment plant	
Municipal sewage treatment plant:	
Discharge rate	2.000 m3/d
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):87,3 %	

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		
Waste Recovery	External recovery and recycling of waste should comply with applicable local and/or national regulations.	

Section 3. Exposure estimation and reference to its source

3.1.Health:	*When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.*

PROC15: Use as laboratory reagent *Laboratory activities, Pouring from small containers*

	Exposure level	RCR	Method	Remarks
Inhalation	0,1 mg/m³	0,01	ECETOC TRA worker v3	
Dermal	0,34 mg/kg/day	0,07	ECETOC TRA worker v3	
combined routes		0,08	ECETOC TRA worker v3	

3.2.Environment:	*Used EUSES model. When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted PNECs and the resulting risk characterisation ratios are expected to be less than 1.*

ERC8a: Wide dispersive indoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,921 mg/l	0,184	EUSES	
Marine water	0,092 mg/l	0,184	EUSES	
Freshwater sediment	0,741 mg/kg wwt	0,184	EUSES	
Marine sediment	0,074 mg/kg wwt	0,184	EUSES	
Soil	0,072 mg/kg wwt	0,107	EUSES	

Sewage Treatment Plant	8,8 mg/l	0,44	EUSES	

Section 4 Guidance to check compliance with the exposure scenario

4.1Health	*Confirm that RMMs and OCs are as described or of equivalent efficiency..*
4.2. Environment	*Further details on scaling and control technologies are provided in SPERC factsheet.ries-libraries.html).*

Scaling: The downstream user can check the compliance of his site by comparing site specific data with defaults used in the exposure assessment. The site specific quotient should be inferior or equal to the spERC quotient.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \geq \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$

mspERC: Substance use rate in spERC
EER,spERC: Efficacy of RMM in spERC
Frelease spERC: Initial release fraction in spERC
DFspERC: dilution factor of STP effluent in river
msite: Substance use rate at site
EER,site: Efficacy of RMM at site
Frelease site: Initial release fraction at site
DFsite: dilution factor of STP effluent in river