

SAFETY DATA SHEET

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

1.1 Product identifier

Product name: Eastman EastaPure(TM) n-Butyl Acetate

Product No.: EAN 900710. 19881-00, P1988100, P1988101, P1988103, E1988101, P1988107, P1988106, P1988105, P1988104

Synonyms, Trade Names: 19881-00

Additional identification Chemical name: REACH Registration No.: CAS-No.:

acetic acid, butyl ester 01-2119485493-29-0010 123-86-4

- 1.2 Relevant identified uses of the substance or mixture and uses advised against Identified uses: Solvent Please refer to the Annex for a listing of uses. Uses advised against: None known.
- 1.3 Details of the supplier of the safety data sheet Manufacturer / Supplier

China Amines Co., Ltd UNIT 1021, BEVERLEY COMMERCIAL CENTRE, 87-105CHATHAM ROAD SOUTH, TSIM SHA TSUI, KOWLOON HONG KONG Emergency Contact : +86 18938922889

Visit our website at www.chinaamines.com or email emnmsds info@chinaamines.com

National Supplier

Eastman Chemical B.V. Fascinatio Boulevard 602-614 2909 Capelle aan den IJssel The Netherlands Telephone: (31) 10 2402 111

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification



2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Regulation No. 1272/2008.

Physical hazards Flammable liquids	Category 3	H226: Flammable liquid and vapor.	
Health hazards Specific target organ toxicit single exposure	ty - Category 3	H336: May cause drowsiness or dizzin	ess.
Hazard summary Physical hazards:	Flammable liquid and	vapor.	
Health hazards Inhalation:	May cause drowsiness	or dizziness.	
Eye contact:	None known.		
Skin contact:	Repeated exposure ma	ay cause skin dryness or cracking.	
Ingestion:	None known.		
Other Health Effects:	No data available.		
Environmental hazards:	Not applicable		

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

R10: Flammable.

R66: Repeated exposure may cause skin dryness or cracking.

R67: Vapours may cause drowsiness and dizziness.

2.2 Label elements



Signal words:

WARNING!

Hazard	Statem	ient(s))
--------	--------	---------	---

H226: Flammable liquid and vapor. H336: May cause drowsiness or dizziness.



Precautionary statement

Prevention:	P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking. P233: Keep container tightly closed. P240: Ground/bond container and receiving equipment. P241: Use explosion-proof electrical/ventilating/lighting/equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P280: Wear protective gloves/protective clothing/eye protection/face protection. P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P271: Use only outdoors or in a well-ventilated area.
Response:	P370 + 378: In case of fire: Use water spray, carbon dioxide, dry chemical or foam for extinction. P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell.
Storage:	P403+P233: Store in a well-ventilated place. Keep container tightly closed. P235: Keep cool. P405: Store locked up.
Disposal:	P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Supplemental label infor	mation EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards: None known.

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
n-butyl acetate	100%	CAS-No.: 123-86-4 EC No.: 204-658-1 INDEX No.: 607-025-00-1 REACH Registration No.: 01-2119485493-29- 0010	

Explanation for Notes (if applicable):

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has w orkplace exposure limit(s).

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.



Classification

Chemical name	Classification		Notes
n-butyl acetate	DSD:	R10, R66, R67	
	CLP:	Flam.Liq. 3, H226; STOT SE3, H336	

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008 .:

The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation:	Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
Eye contact:	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.
Skin contact:	Remove contaminated clothing and shoes. Wash with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.
Ingestion:	Seek medical advice.
4.2 Most important symptoms and effects, both acute and delayed:	Narcotic effect.
4.3 Indication of any immediate	nedical attention and special treatment needed
Hazards:	Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Treatment:	Treat symptomatically.
SECTION 5: Firefighting mea	asures
General fire hazards:	Flammable liquid and vapor. USE WATER WITH CAUTION. Material will float and may ignite on surface of water.

 5.1 Extinguishing media
 Suitable extinguishing media:
 Water spray. Dry chemical. Carbon Dioxide. Foam.

 Unsuitable extinguishing media:
 None known.



5.2 Special hazards arising from the substance or mixture:	Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations.	
5.3 Advice for firefighters		
Special fire fighting procedures:	Water may be ineffective in fighting the fire. Use water spray to keep fire-exposed containers cool.	
Special protective equipment for fire-fighters:	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.	
SECTION 6: Accidental rele	ase measures	
6.1 Personal precautions	Wear appropriate personal protective equipment	

protective equipment and emergency procedures:	wear appropriate personal protective equipment.
6.2 Environmental precautions:	Avoid release to the environment.
6.3 Methods and material for containment and cleaning up:	Eliminate sources of ignition. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams.
Notification Procedures:	In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:	Avoid breathing high vapor concentrations. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Wash thoroughly after handling.
7.2 Conditions for safe storage, including any incompatibilities:	Keep container tightly closed and in a well-ventilated place.
7.3 Specific end use(s):	Solvent

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Country specific exposure limits have not been established or are not applicable unless listed below.

DNEL-Values



Critical component	Туре	Route of Exposure		Remarks
n-butyl acetate	Workers (industrial/professi	DNEL Human inhalation, short-term	960 mg/m3	
n-butyl acetate		DNEL Human inhalation, short-term (acute):,local	960 mg/m3	
n-butyl acetate		DNEL Human inhalation long-term (repeated):,systemic	480 mg/m3	
n-butyl acetate		DNEL Human inhalation long-term (repeated):,local	480 mg/m3	
n-butyl acetate	General Population	DNEL Human inhalation, short-term (acute):,systemic	859,7 mg/m3	
n-butyl acetate		DNEL Human inhalation, short-term (acute):,local	859,7 mg/m3	
n-butyl acetate		DNEL Human inhalation long-term (repeated):,systemic	102,34 mg/m3	
n-butyl acetate		DNEL Human inhalation long-term (repeated):,local	102,34 mg/m3	

PNEC-Values

Critical component	Environmental		Remarks	
	compartment			
n-butyl acetate	Water	0,18 mg/l		
n-butyl acetate	Seawater	0,018 mg/l		
n-butyl acetate	Aqua Intermittent	0,36 mg/l		
n-butyl acetate	Freshwater Sedimen	t 0,981 mg/kg	dry	
n-butyl acetate	Saltwater Sediment	0,0981 mg/kg	dry	
n-butyl acetate	Soil	0,0903 mg/kg	dry	
n-butyl acetate	Sewage Treatment Plant	35,6 mg/l		

8.2 Exposure controls

controls:

Appropriate engineering Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment



General information:	All information for relevant exposure scenarios including risk management measures are listed in the Annex. PPE selections vary based on potential exposure conditions such as application, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material is based upon intended, normal usage. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Provide eyewash station and safety shower.
Eye/face protection:	Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.
Skin protection Hand protection:	Use protective gloves made of: Polyethylene/Ethylene Vinyl Alcohol (PE/EVAL). Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves.
Other:	Any specific clothing information provided is based on published literature and manufacturer data. Body protection suitability and breakthrough time will differ depending on the specific use conditions. Clothing to be considered for this material may include sleeves, aprons, pants depending on the use and likelihood of skin contact. Please refer to the hand protection section for material type.
Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge and full facepiece. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. For high airborne concentrations, use an approved supplied-air respirator. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas warning properties are poor, or if air purifying filter rating may be exceeded.
Hygiene measures:	Observe good industrial hygiene practices.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties
 - Appearance



SDSEU / EN / TEU01 Version: 2.2 Revision date: 27.08.2014 Initiator: 0001 150000015940

Physical State:	Liquid			
Form:	Liquid			
Color:	Colorless			
Odor:	Sweet, ester			
Odor Threshold: Not determined.				
pH:	No data available.			
Melting Point	-74 °C			
Boiling Point:	125 °C			
Flash Point:	27 °C (Tag closed cup)			
Evaporation Rate:	Not determined.			
Flammability (solid, gas):	s): No data available.			
Flammability Limit - Upper (%)-: No data available.				
Flammability Limit - Lower (%)-: No data available.				
Vapor pressure:	15 hPa (20 °C)			
Vapor density (air=1):	4			
Specific Gravity:	0,8812 (20 °C)			
Solubility(ies)				
Solubility in Water:	5,3 g/l (20 °C)			
Solubility (other):	No data available.			
Partition coefficient (n-octanol/water):	No data available.			
Autoignition Temperature:	No data available.			
Decomposition Temperature:	(DSC) No exotherm to 400°C			
Dynamic Viscosity:	No data available.			
Kinematic viscosity:	0,83 mm2/s (20 °C)			
Explosive properties:	No data available.			
Oxidizing properties:	No data available.			
Other information				
Minimum ignition temperature: 407 °C (ASTM D2155)				

SECTION 10: Stability and reactivity

10.1 Reactivity:	None known.
10.2 Chemical stability:	Stable
10.3 Possibility of hazardous reactions:	None known.
10.4 Conditions to avoid:	Heat, sparks, flames.
10.5 Incompatible materials:	Strong oxidizing agents.
10.6 Hazardous decomposition products:	Carbon Dioxide. Carbon Monoxide.



SECTION 11: Toxicological information

Information on likely routes of Inhalation:	of exposure May cause drowsiness or dizziness.
Ingestion:	None known.
Skin contact:	Repeated exposure may cause skin dryness or cracking.
Eye contact:	None known.
11.1 Information on toxicological	effects
Acute Toxicity	
Oral Product:	No data available.
Specified substance(s) n-butyl acetate	Oral LD-50: (Rat): 14.130 mg/kg
Dermal Product:	No data available.
Specified substance(s) n-butyl acetate	Dermal LD-50: (Rabbit): > 16ml/kg
Inhalation Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Repeated dose toxicity Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Skin corrosion/irritation: Product:	No data available.
Specified substance(s) n-butyl acetate	(Rabbit, 24 h): none
Serious eye damage/eye irritation: Product:	No data available.
Specified substance(s) n-butyl acetate	(Rabbit, 24 h): none
Respiratory or skin sensitization: Product:	No data available.



Specified substance(s) n-butyl acetate	Skin Sensitization:, (Guinea Pig) - non-sensitizing
Mutagenicity	
In vitro Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
In vivo Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Carcinogenicity Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Reproductive toxicity Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Specific target organ toxicity Product:	/ - single exposure No data available.
Specified substance(s) n-butyl acetate	Narcotic effect.
Specific target organ toxicity Product:	 repeated exposure No data available.
Specified substance(s) n-butyl acetate	No data available.
Aspiration hazard Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Other adverse effects:	No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity



Fish Product:	No data available
Specified substance(s)	
n-butyl acetate	LC-50 (Fathead Minnow, 96 h): 18 mg/l
Aquatic invertebrates Product:	No data available.
Specified substance(s) n-butyl acetate	LC-50 (Water Flea, 48 h): 44 mg/l
Chronic Toxicity	
Fish Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Aquatic invertebrates Product:	No data available.
Specified substance(s) n-butyl acetate	No data available.
Toxicity to Aquatic Plants Product:	No data available.
Specified substance(s) n-butyl acetate	EC-50 (Alga, 72 h): 648 mg/l
12.2 Persistence and degradabilit	y .
Biodegradation Product:	No data available.
Specified substance(s) n-butyl acetate	83 % (28 d)
Biological Oxygen Demand: Product	BOD-5: 1.020 mg/g BOD-20: 1.450 mg/g
Chemical Oxygen Demand: Product	No data available.
Specified substance(s) n-butyl acetate	1.010 mg/g
BOD/COD ratio Product	No data available.
Specified substance(s) n-butyl acetate	72 %
12.3 Bioaccumulative potential Product:	No data available.

[©]COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



No data available.
No data available.
tion to environmental compartments No data available.
No data available.
No data available.
No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information:	No data available.
----------------------	--------------------

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Mix with compatible chemical which is less flammable and incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

European Waste Codes

Comply with requirements of waste disposal legislation and any local authority requirements.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Possible Shipping Description(s):

UN 1123 BUTYL ACETATES 3 III

IMDG - International Maritime Dangerous Goods Code

Possible Shipping Description(s):

UN 1123 BUTYL ACETATES 3 III

IATA ©COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



Possible Shipping Description(s):

UN 1123 Butyl acetates 3 III

SECTION 15: Regulatory information

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

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): This product is listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.KE-04179

15.2 Chemical safety Yes. assessment:

SECTION 16: Other information

Revision Information:	Not relevant.
Key literature references and sources for data:	No data available.
Wording of the R-phrases and H-statements in section 2 and 3:	R10 = Flammable. R66 = Repeated exposure may cause skin dryness or cracking. R67 = Vapours may cause drowsiness and dizziness.
	Flam. Liq. = Flammable liquids STOT SE = Specific target organ toxicity - single exposure 3 = Category 3 3 = Category 3 H226= Flammable liquid and vapor.



H336= May cause drow siness or dizziness.

Training information:

Issue date: SDS No.: Disclaimer: 27.08.2014

No data available.

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.



Annex to the extended Safety Data Sheet (eSDS) Eastman EastaPure(TM) n-Butyl Acetate 150000015940

Content		
	Exposure scenario I.	Manufacture of substance or use as process chemical or extracting 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).
	Exposure scenario II.	Bulk loading (including marine vessel/barge, rail/road car and IBC loading)
	Exposure scenario III.	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities
	Exposure scenario IV.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use
	Exposure scenario V.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use
	Exposure scenario VI.	Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use
	Exposure scenario VII.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use
	Exposure scenario VIII.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use
	Exposure scenario IX.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Consumer use
	Exposure scenario X.	Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use
	Exposure scenario XI.	Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use
	Exposure scenario XII.	Other consumer uses

Summary

	Process categories	Product categories [PC]:	Sector of uses [SU]	Article categories [AC]	Environmental release
Manufacture of substance or use as process chemical or extracting 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).	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC8b PROC15		SU8 SU9	[70]	ERC1
Bulk loading (including marine vessel/barge, rail/road car and IBC loading)	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC9 PROC15		SU8 SU9		ERC1
Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC9 PROC14 PROC14		SU8 SU10		ERC2



Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use	PROC1 PROC2 PROC3 PROC4 PROC7 PROC5 PROC8a PROC8b PROC10 PROC13 PROC15		SU3 SU17 SU18	ERC4
Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use	PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8a PROC8b PROC10 PROC11 PROC11 PROC13 PROC15 PROC19		SU19 SU22	ERC8a
Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use		PC9a_1 PC9a_2 PC9a_3 PC9a_4	SU21	ERC8a
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use	PROC1 PROC2 PROC3 PROC4 PROC7 PROC8a PROC8a PROC8b PROC10 PROC13		SU3 SU8 SU9	ERC4
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance, Professional use	PROC1 PROC2 PROC3 PROC4 PROC8a PROC8b PROC10 PROC11 PROC13		SU22	ERC8a
Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance, Consumer use		PC3_1 PC3_2 PC35_1 PC35_2 PC35_3	SU21	ERC8a
Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use	PROC10 PROC15		SU8 SU9	ERC4
Covers the use as a component of cleaning products within closed or contained systems	PROC10 PROC15		SU22	ERC8a



including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use			
Other consumer uses	PC28, PC39	SU21	ERC8a, ERC8d



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

SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
PROC1. PROC2. PROC3. PROC4. PROC8a. PROC8b. PROC15.
ERC1

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure						
Area of use Room size: Temperature: Ventilation rate Remarks						
Indoor use.	20 m3	25 °C		Liquid, v apour pressure 0,5 - 10 kPa at STP.		

Frequency and duration of use	Duration	Frequency of use:	Remarks
Exposure time	480 min	5 day s/week	
Name of contributing exposure sce	nario	Risk manaç	gement measures (RMM)
General exposures (closed systems), Continuous process, no sampling:		her specific measures identified.	
General exposures (closed systems), Comprocess, with sample collection:	ntinuous No ot	her specific measures identified.	
General exposures (closed systems), Use contained batch processes:	ein Noot	her specific measures identified.	
Bulk transfers, internal:	No ot	her specific measures identified.	
Equipment cleaning and maintenance:	No ot	her specific measures identified.	
Material transfers, Transport:	No ot	her specif ic measures identif ied.	
Laboratory activities:	No ot	her specific measures identified.	

2.2.Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level	See chapter 8 of the safety data sheet (Environmental exposure controls).
(source) to prevent release	



			-						
Orga from	nisational measures to prevent/limit site:	release	none						
Envir	onment factors not influenced by ris	sk managem	ent	<i>.</i> .					
Flow	rate of receiving surface water (m ³ /d):	345.600 m3/	/d					
Loca	I freshwater dilution factor:		10						
Loca	I marine water dilution factor:		100						
ERC	: Manufacture of substances								
	Technical onsite conditions and m	easures to i	reduce or limit o	discharges, air	emission	s and r	eleases to so	il	
	Air		Treatment of needed to co	f air emissions is omply with other	s not requi	red for 1.	the purposes	of REACH compliance but may	y be
	Soil		Do not apply	industrial sludg	e to natura	al soils.			
	Water		Prev ent env	ironmental disch	arge cons	istent v	vith regulatory	requirements.	
	Amounts used: Annual amount pe	er site	120.000 toni	nes/yr					
	Amounts used: Fraction of EU ton in region:	nage used	1						
	Amounts used: Daily amount per s	site	400 tonnes/o	day					
	Msafe		Daily amoun	nt per site: 400 f	onnes/day	1			
	Frequency and duration of use: Continuous 300 day s/y ear Emission day s (day s/year):								
	process:	ontinuous		ai Eilission day	3 (uay 3/y	<i>Jul)</i> .			
	Process: Other given operational conditions	s affecting e	environmental es	xposure	's (uay 3/y	501).			
	other given operational conditions	s affecting e Emission (days/yea	environmental e days r):	xposure Emission fac Air	tors Soil	541).	Water	Remarks	
	Other given operational conditions type Continuous release.	s affecting e Emission (days/yea 300	environmental e days r):	xposure Emission fac Air 0,5 %	tors Soil 0,01 %	, , ,	Water 0,38 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release.	s affecting e Emission (days/yea 300	nvironmental e days r):	xposure Emission fac Air 0,5 % ent plant	tors Soil 0,01 %	, , ,	Water 0,38 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release.	s affecting e Emission (days/yea 300 co municipa	nvironmental e days r): I sewage treatme ant (m ³ /d):	xposure Emission fac Air 0,5 % ent plant	tors Soil 0,01 %	501). 5	Water 0,38 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release. Conditions and measures related to Size of municipal sewage system/to Discharge rate:	s affecting e Emission (days/yea 300 o municipa reatment pl	nvironmental e days r): I sewage treatm ant (m ³ /d):	xposure Emission fac Air 0,5 % ent plant	tors Soil 0,01 %		Water 0,38 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release. Conditions and measures related t Size of municipal sewage system/tu Discharge rate: Total efficiency of removal from wast	s affecting e Emission (days/yea 300 co municipa reatment pl ewater after	I sewage treatment (m³/d): 28.6 28.6 28.6 consite and offsite	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat	tors Soil 0,01 %	i) RMM	Water 0,38 % \$ (%): 89,1 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release. Conditions and measures related t Size of municipal sewage system/tt Discharge rate: Total efficiency of removal from wast	s affecting e Emission (days/yea 300 co municipa reatment pl ewater after	I sewage treatmant (m³/d): 28.6 28.6 28.6 consite and offsite	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat	tors Soil 0,01 %	i) RMM	Water 0,38 % \$ (%): 89,1 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release. Conditions and measures related t Size of municipal sewage system/t Discharge rate: Total efficiency of removal from wast Conditions and measures related to	s affecting e Emission (days/yea 300 co municipa reatment pl ewater af ter o external tu	I sewage treatment (m³/d): 28.6 28.6 consite and offsite ceatment of wasi	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal	tors Soil 0,01 %	t) RMM	Water 0,38 % \$ (%): 89,1 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Conditions and measures related t Size of municipal sewage system/t Discharge rate: Total efficiency of removal from wast Conditions and measures related te Size of sewage system/t Discharge rate: Total efficiency of removal from wast Conditions and measures related te Fraction of used amount transferrer Suitable waste transmet	s affecting e Emission (days/yea 300 co municipa reatment pl ewater af ter o external tr ed to external	I sewage treatment of waste treatment of waste treatment of waste treatment of the treatmen	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent:	tors Soil 0,01 %	i) RMM	Water 0,38 % \$ (%): 89,1 %	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Conditions and measures related t Size of municipal sewage system/tr Discharge rate: Total efficiency of removal from wast Conditions and measures related the fraction of used amount transferred Suitable waste treatment	s affecting e Emission (days/yea 300 co municipa reatment pl ewater af ter o external tr ed to extern	I sewage treatment of vase and (m³/d): 28.6 consite and offsite reatment of vase Treatment effe	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent: cretiveness	tors Soil 0,01 %	a) RMM	Water 0,38 % s (%): 89,1 % arks	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Continuous release. Conditions and measures related to Size of municipal sewage system/to Discharge rate: Total efficiency of removal from wast Conditions and measures related to External treatment and disposal of was should comply with applicable local a national regulations.	s affecting e Emission (days/yea 300 o municipa reatment pl ewater after o external ti ed to external aste ind/or	I sewage treatment ant (m³/d): 28.8 28.8 28.8 28.8 28.8 28.8 28.8 28.	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent: cctiveness	tors Soil 0,01 %	t) RMM	Water 0,38 % s (%): 89,1 % arks	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Conditions and measures related t Size of municipal sewage system/ti Discharge rate: Total efficiency of removal from wast Conditions and measures related to Fraction of used amount transferred Suitable waste treatment External treatment and disposal of was should comply with applicable local a national regulations. Waste Recovery	s affecting e Emission (days/yea 300 o municipa reatment pl ewater after o external tu ed to external aste ind/or	I sewage treatmant (m³/d): 28.8 28	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent: activeness	tors Soil 0,01 %	t) RMM	Water 0,38 % s (%): 89,1 % arks comply with a	Remarks ESVOC spERC 1.1.v1	
	Other given operational conditions type Conditions and measures related t Size of municipal sewage system/tr Discharge rate: Total efficiency of removal from wast Conditions and measures related to Fraction of used amount transferred Suitable waste treatment External treatment and disposal of was should comply with applicable local a national regulations. Waste Recovery	s affecting e Emission (days/yea 300 co municipa reatment pl ewater after o external tu ed to extern aste ind/or	I sewage treatmant (m³/d): 28.8 28.8 28.8 28.8 consite and of fsite reatment of wasi al waste treatment Treatment effe External recover regulations.	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent: activeness	tors Soil 0,01 %	a) RMM	Water 0,38 % s (%): 89,1 % arks comply with a	Remarks ESVOC spERC 1.1.v1	
Secti	Other given operational conditions type Continuous release. Conditions and measures related t Size of municipal sewage system/ti Discharge rate: Total efficiency of removal from wast Conditions and measures related to Fraction of used amount transferred Suitable waste treatment External treatment and disposal of was should comply with applicable local a national regulations. Waste Recovery on 3. Exposure estimation	s affecting e Emission (days/yea 300 o municipa reatment pl ewater after o external tu ed to external aste ind/or	I sewage treatmant (m³/d): 28.8 28	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ent: activeness	tors Soil 0,01 %	i) RMM	Water 0,38 % s (%): 89,1 % arks comply with a	Remarks ESVOC spERC 1.1.v1	
Secti 3.1. H	Other given operational conditions type Continuous release. Conditions and measures related t Size of municipal sewage system/tr Discharge rate: Total efficiency of removal from wast Conditions and measures related tr Fraction of used amount transferred Suitable waste treatment External treatment and disposal of was should comply with applicable local a national regulations. Waste Recovery on 3. Exposure estimation	s affecting e Emission (days/yea 300 o municipa reatment pl ewater after o external tr ed to external aste ind/or When the exposures expected	I sewage treatment ant (m ³ /d): 28.8 28.8 28.8 28.8 28.8 28.8 28.8 28.	xposure Emission fac Air 0,5 % ent plant 300 m3/d e (domestic treat te for disposal ant: ctiveness ery and recy cline isk management d to exceed the	tors Soil 0,01 % ment plant	Rem Rem (RMM DNELS	Water 0,38 % s (%): 89,1 % arks comply with a s(s) and operat and the result	Remarks ESVOC spERC 1.1.v1 pplicable local and/or national conditions (OCs) are obs ting risk characterisation ratios	erved, are

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

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

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	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

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 char (PEC/PNI	acterisation ratio Method C):	Remarks
---------------------------------------	----------------------------------	---------



Water	0,048 mg/L	0,267	Used EUSES model.	
Seawater	0,058 mg/L	3,2	Used EUSES model.	The RCR values for this compartment are not considered relevant for this scenario as the site is a sufficient distance from the sea.
Freshwater Sediment	0,963 mg/kg dwt	0,982	Used EUSES model.	
Saltwater Sediment	1,15 mg/kg dwt	11,72	Used EUSES model.	The RCR values for this compartment are not considered relevant for this scenario as the site is a sufficient distance from the sea.
Soil	0,07 mg/kg dwt	0,78	Used EUSES model.	
Sewage Treatment Plant	5,75 mg/L	0,162	Used EUSES model.	

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 (http://cefic.or for-industries.libraries.html).ries-libraries.html).				
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC qu	of his site by comparing site specif ic data with defaults used in the exposure assessment. The site uotient.			
$\frac{\mathrm{m_{sperc}}*(1-\mathrm{E_{er,sp}})}{\mathrm{DF_{sp}}}$	$r_{\text{perc}} > F_{\text{release,spERC}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$			
mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease,,spERC: Initial release fraction in spERC DFspERC: dilution f actor of STP eff luent in river msite: Substance use rate at site EER,site: Efficacy of RMM at site Frelease,,site: Initial release f raction at site DFsite: dilution f actor of STP eff luent in river				



Exposure scenario II. Bulk loading (including marine vessel/barge, rail/road car and IBC loading)

Section 1: Exposure scenario		
Sector(s) of Use		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. PROC8a. PROC8b. PROC9. PROC15.
Name of contributing environmental scenario and corresponding ERC		ERC1
Section 2: Control of Exposure		
-		
Physical form of the product:	liquid	
Vapour pressure:	15 hPa	
Process temperature:	20 °C	
Remarks	not rele	evant
Concentration of the substance in a mixture:	Cover	s percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure							
Area of use	Room size:	Temperature:	Ventilation rate	Remarks			
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.			

Frequency and duration of use	Duration		Frequency of use:	Remarks		
Exposure time	480 min		5 day s/week			
Name of contributing exposure sce	nario		Risk manag	gement measures (RMM)		
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.				
General exposures (closed systems), Use in contained batch processes:		No other specific measures identified.				
Bulk transfers, internal:		No other specific measures identified.				
Equipment cleaning and maintenance:		No other specific measures identified.				
Material transfers, Transport:		No other specific measures identified.				
Drum and small package filling:		No other specific measures identified.				
Laboratory activities:		No other specific measures identified.				

2.2. Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
©COPYRIGHT 2014 BY EASTMAN CHEMICAL CO	OMPANY 22/64



rganisational measures to prevent/limi om site:	it release	none						
		(
nvironment factors not influenced by f	ent) m2/d						
low rate of receiving surface water (m%)	a):	10.000	/ III.3/ u					
ocal freshwater dilution factor:		10						
cal marine water dilution factor:		100						
RC1: Manufacture of substances								
Technical onsite conditions and r	neasures to r	educe or	limit discharges, ai	r emission	s and	releases to s	oil	
Air		Treatm needeo	nent of air emissions d to comply with othe	is not requi er legislation	ired fa n.	r the purposes	of REACH compliance but may b	be
Water		Prever	nt env ironmental disc	charge cons	sistent	with regulator	y requirements.	
Amounts used: Annual amount p	er site	120.00	00 tonnes/yr					
Amounts used: Fraction of EU to in region:	nnage used	1						
Amounts used: Daily amount per	site	400 to	nnes/day					
Msafe		Daily a	Daily amount per site: 400 tonnes/day					
Frequency and duration of use: 0 process:	Continuous	300 da	ay s/y ear Emission da	ays (days/y	ear):			
Other given operational condition	ns affecting e	nvironme	ntal exposure					
type	Emission (days/year	days r)·	Emission fa	Soil		Water	– Remarks	
Continuous release.	300	.).	0,01 %	0,001	%	0,001 %	ESVOC spERC 1.1b.v1	
Conditions and measures related	to municipal	sewage tr	reatment plant					
Size of municipal sewage system/	treatment pla	ant (m³/d):						
Discharge rate:			2.000 m3/d					
Total efficiency of removal from was	stewater after o	onsite and	offsite (domestic tre	atment plan	t) RMI	Vls (%): 89,1 %	0	
Conditions and measures related	to external tr	eatment o	f waste for disposa	1				
Fraction of used amount transfer	red to externa	al waste tr	eatment:					
Suitable waste treatment	Treatmen	t effectiveness		Remarks				
External treatment and disposal of v should comply with applicable local national regulations.	vaste and/or							
Waste Recovery		External regulation	recovery and recyclins.	ng of waste	shoul	d comply with	applicable local and/or national	
ction 3. Exposure estimation								
. Health:	When the	recommenc are not ex	led risk managemen pected to exceed the	t measures epredicted	(RM) DNEL	Ms) and opera s and the resu	tional conditions (OCs) are observ Iting risk characterisation ratios ar	ved, re

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	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

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	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	



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	0,022 mg/L	0,124	Used EUSES model.	
Seawater	0,002 mg/L	0,123	Used EUSES model.	
Freshwater Sediment	0,447 mg/kg dwt	0,456	Used EUSES model.	
Saltwater Sediment	0,044 mg/kg dwt	0,454	Used EUSES model.	
Soil	0,083 mg/kg dwt	0,915	Used EUSES model.	
Sewage Treatment Plant	0,218 mg/L	0,006	Used EUSES model.	

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 (http://cefic.org/en/reach-for-industries-libraries.html).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.

$$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \ge \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$$
rate in spERC
RMM in spERC
elease fraction in spERC

mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease,.spERC: Initial release fraction in spERC DFspERC: dilution f actor 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 of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities

Section 1: Exposure scenario	
Sector(s) of Use	SU8: Manuf acture of bulk, large scale chemicals (including petroleum products) SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC9. PROC14. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC2
Section 2: Control of Exposure	

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure				
Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.

Frequency and duration of use	Duration		Frequency of use:	Remarks			
Exposure time	480 min		5 day s/week				
Name of contributing exposure sce	nario		Ri	isk management measures (RMM)			
General exposures (closed systems), Co process, no sampling:	ntinuous	No oth	No other specific measures identified.				
General exposures (closed systems), Continuous process, with sample collection:		No other specific measures identified.					
General exposures (closed systems), Use in contained batch processes:		No other specific measures identified.					
Bulk transfers, internal:		No other specific measures identified.					
Mixing operations (open systems):		No other specific measures identified.					
Equipment cleaning and maintenance:		No other specific measures identified.					
Material transfers, Transport:		No other specific measures identified.					
Drum and small package filling:		No other specific measures identified.					
Production of preparations or articles by tabletting, compression, extrusion, pelletisation:		No other specific measures identified.					
Laboratory activities:		No other specific measures identified.					



Risk	management measures (RMM)		Note: Guidar thus, scaling	nce is based on I may be necess	assumed of a sary to defi	operating conditi ne appropriate s	ons which may not be applicable to a te-specific risk management measur	all sites; res.
			-					
Techi (sour	nical conditions and measures at pro ce) to prevent release	cess level	See chapter	8 of the safety	data sheet	(Environmental	exposure controls).	
Orga from	Organisational measures to prevent/limit release from site:							
Envir	onment factors not influenced by risl	k managem	ent					
Flow	rate of receiving surface water (m³/d)	:	18.000 m3/d	1				
	freshwater dilution factor:		10					
LUCA			100					
Local	marine water dilution factor:		100					
ERC2	: Formulation of preparations (mixtures	;)						
r								
	Technical onsite conditions and me	easures to r	educe or limit d	discharges, air	emissions	and releases t	o soil	
	Air		Treatment of needed to co	f air emissions is omply with other	s not requir legislation	ed for the purpo	ses of REACH compliance but may I	be
	Water		Prev ent env	ironmental disch	arge consi	stent with regula	tory requirements.	
L							· ·	
Ι	Amounts used: Annual amount ne	r sita	4 000 tonnes	s/vr				
	Anounts used. Annual anount per		1.000 tonnot	5, 91				
	Amounts used: Fraction of EU toni in region:	nage used	1					
	Amounts used: Daily amount per s	ite	13,33 tonnes	s/day				
	Msafe	Daily amoun	nt per site: 13,33	3 tonnes/da	ау			
L			·					
	Frequency and duration of use: Co process:	ontinuous	300 days/ye	300 day s/y ear Emission day s (day s/year):				
	Other given operational conditions	nvironmental ex	xposure					
	terra a	Emission	days	ays Emission factors Demonstra			Bernarder	
	type	(days/yea): Air Soil		Water	Remarks		
	Continuous release.	300		2,5 %	0,01 %	0,02 %	ESVOC spERC 2.2.v1	
r								
	Conditions and measures related to	o municipal	sewage treatme	ent plant				
	Size of municipal sewage system/tr	eatment pl	ant (m³/d):					
	Discharge rate:		2.00	00 m3/d				
	Total efficiency of removal from waste	waterafter	onsite and off site	e (domestic treat	ment plant) RMMs (%) · 89	1 %	
L					intent plant) ((0): 00,	1 /0	
ſ	Conditions and measures related to	external tr	eatment of wast	te for disposal				
	Fraction of used amount transferre	d to externa	al waste treatme	ent:				
	Suitable waste treatment		Treatment effe	ctiveness		Remarks		
	External treatment and disposal of wa	sto						
	should comply with applicable local and/or national regulations.							
	Weste Besevery							
	waste Recovery		regulations.	ery and recy cline	y or waste	should comply w		
Section	on 3. Exposure estimation							
3.1. H	ealth:	When the exposures expected t	recommended ria are not expected to be less than 1	sk management d to exceed the	measures predicted	(RMMs) and op DNELs and the r	erational conditions (OCs) are obser esulting risk characterisation ratios a	ved, re
		, , , , , , , , , , , , , , , , , , , ,						

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

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe	

©COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



		use.	
Various Routes	0,0001	Used CHESAR model.	

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	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems)

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

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 (mixtures)

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,015 mg/L	0,083	Used EUSES model.	
Seawater	0,002 mg/L	0,307	Used EUSES model.	
Freshwater Sediment	0,301 mg/kg dwt	0,083	Used EUSES model.	
Saltwater Sediment	0,03 mg/kg dwt	0,306	Used EUSES model.	
Soil	0,065 mg/kg dwt	0,724	Used EUSES model.	
Sewage Treatment Plant	0,145 mg/L	0,004	Used EUSES model.	

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 (http://cefic.org/en/reach-for-industries-libraries.html).ries-libraries.html).
Scaling: The downstream user can check the compliance of specific quotient should be inferior or equal to the spERC qu	of his site by comparing site specific data with defaults used in the exposure assessment. The site uotient.
$\frac{m_{spERC} * (1 - E_{ER,sp}}{DF_{sp}}$ 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	$\frac{P_{pERC} + F_{release,spERC}}{P_{pERC}} \ge \frac{m_{site} + (1 - E_{ER,site}) + F_{release,site}}{DF_{site}}$



Exposure scenario IV. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Industrial use

Section 1: Exposure scenario			
Sector(s) of Use		SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU17: General manuf acturing, e.g. machinery, equipment, vehicles, other transport equipment. SU18: Manuf acture of furniture	
List of names of contributing worker scenarios and corresponding PROCs		PROC1. PROC2. PROC3. PROC4. PROC7. PROC5. PROC8a. PROC8b. PROC10. PROC13. PROC15.	
Name of contributing environmental scenario and corresponding ERC		ERC4	
Section 2: Control of Exposure			
Physical form of the product:	liquid		
Vapour pressure:	15 hPa		
Process temperature:	20 °C		
Remarks	not rele	elev ant	
Concentration of the substance in a mixture:	Cover	s percentage substance in the product up to 100 % (unless stated differently).	

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure						
Area of use	Room size:	Temperature:	Ventilation rate	Remarks		
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.		

Frequency and duration of use	Duration		Frequency of use:	Remarks			
Exposure time	480 min		5 day s/week				
Name of contributing exposure sce	nario		Risk manag	gement measures (RMM)			
General exposures (closed systems), Con process, no sampling:	ntinuous	No oth	er specif ic measures identif ied.				
General exposures (closed systems), Continuous process, with sample collection:		No oth	er specific measures identified.				
General exposures (closed systems), Use in contained batch processes:		No other specific measures identified.					
Bulk transfers, internal:		No other specific measures identified.					
Spraying:		Provide extract ventilation to points where emissions occur.					
Mixing operations (open systems):		No other specific measures identified.					
Equipment cleaning and maintenance:		No other specific measures identified.					
Material transfers, Transport:		No other specific measures identified.					
Rolling, Brushing:		No other specific measures identified.					
Dipping, immersion and pouring:			No other specific measures identified.				
Laboratory activities:		No other specific measures identified.					



2.2.Control of environmental exposure

Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk managemer	nt
Flow rate of receiving surface water (m ³ /d):	18.000 m3/d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Air		Treatment on needed to co	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.				
Water		Prev ent env	ironmental discl	narge cons	sistent	with regulator	y requirements.
Amounts used: Annual amou	nt per site	5.000 tonnes	s/yr				
Amounts used: Fraction of El in region:	U tonnage used	1					
Amounts used: Daily amount	per site	16,66 tonnes	s/day				
Msafe		Daily amour	nt per site: 16,6	6 tonnes/d	ay		
Frequency and duration of us process:	300 days/ye	ear Emission da	/s (days/y	ear):			
Other given operational cond	itions affecting e	environmental e	xposure				
type	Emission (days/yea	days r)·	Emission fac	tors		Water	Remarks
Continuous release.	300		0,98 %	0 %		0,02 %	ESVOC spERC 4.3a.v1
Conditions and measures rela	ated to municipa	l sewage treatm	ent plant				
Size of municipal sewage syst	tem/treatment p	ant (m³/d):	•				
Discharge rate:		2.00	00 m3/d				
Total efficiency of removal from	wastewater after	onsite and offsite	e (domestic trea	tment plan	t) RMN	//s (%): 89,1 9	%
Conditions and measures rela	ted to external t	reatment of was	te for disposal				
Fraction of used amount trans	sferred to extern	al waste treatme	ent:				
Suitable waste treatment	Treatment effe	ctiveness		Rem	narks		
External treatment and disposal should comply with applicable lo national regulations.							
Waste Recovery	External recover regulations.	External recovery and recycling of waste should comply with applicable local and/or national regulations.					

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	l of exposure General exposures (closed systems), Continuous process, no sampling



	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

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	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC7: Industrial spraying Spraying

	Exposure level	RCR	Method	Remarks
Inhalation	60,5 mg/m³	0,126	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,126	Used CHESAR model.	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems)

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	



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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing Rolling, Brushing

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

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.

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,019 mg/L	0,103	Used EUSES model.	
Seawater	0,002 mg/L	0,103	Used EUSES model.	
Freshwater Sediment	0,374 mg/kg dwt	0,381	Used EUSES model.	
Saltwater Sediment	0,037 mg/kg dwt	0,379	Used EUSES model.	
Soil	0,073 mg/kg dwt	0,811	Used EUSES model.	
Sewage Treatment Plant	0,181 mg/L	0,005	Used EUSES model.	

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 (http://cefic.org/en/reach-for-industries-libraries.html).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.		



 $\frac{m_{\mathsf{spERC}}*(1\text{-}E_{\mathsf{ER},\mathsf{spERC}})*F_{\mathsf{release},\mathsf{spERC}}}{DF_{\mathsf{spERC}}} \geq \frac{m_{\mathsf{site}}*(1\text{-}E_{\mathsf{ER},\mathsf{site}})*F_{\mathsf{release},\mathsf{site}}}{DF_{\mathsf{site}}}$ 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. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Professional use

Section 1: Exposure scenario	
Sector(s) of Use	SU19: Building and construction work SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC5. PROC8a. PROC8b. PROC10. PROC11. PROC13. PROC15. PROC19.
Name of contributing environmental scenario and corresponding ERC	ERC8a
Section 2: Control of Exposure	
Bhygigal form of the product:	d

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure						
Area of use	Room size:	Temperature:	Ventilation rate	Remarks		
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.		

Frequency and duration of use	Duration		Frequency of use:	Remarks			
Exposure time 480 min			5 days/week				
Name of contributing exposure sco	enario	Risk management measures (RMM)					
General exposures (closed systems), Continuous process, no sampling:		No other specific measures identified.					
General exposures (closed systems), Co process, with sample collection:	ontinuous	No oth	her specific measures identified	d.			
General exposures (closed systems), Us contained batch processes:	se in	No other specific measures identified.					
Bulk transfers, internal:			No other specific measures identified.				
Mixing operations (open systems):			Limit the substance content in the product to 25 %.				
Equipment cleaning and maintenance:		Limit t	he substance content in the pro	oduct to 25 %.			
Material transfers, Transport:		No other specific measures identified.					
Rolling, Brushing:		Limit the substance content in the product to 25 %.					
Spraying:			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:			Limit the substance content in the product to 25 %.				
Laboratory activities:			No other specific measures identified.				
Hand application - finger paints, pastels, adhesives:			Limit the substance content in the product to 25 %.				



2.2.Control of environmental exposure						
Risk management measures (RMM)	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 conditions and measures at process level	See chapter 8 of the safety data sheet (Environmental exposure controls).					
(source) to prevent release						
Organisational measures to prevent/limit release	none					
from site:						
Environment factors not influenced by risk management	nt					
Flow rate of receiving surface water (m ³ /d):	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	Treatment of needed to co	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.				
Water	Prev ent env	ironmental discha	rge consistent	with regulatory	requirements.	
Amounts used: Daily amount per	site	0,00055 toni	nes/day			
Amounts used: Fraction of main source to local environment		0,0005				
Frequency and duration of use: C process:	365 day s/y ear Dispersiv e use.					
Other given operational condition	Other given operational conditions affecting environmental exposure					
type Emission da (days/year):		ays :	Emission factor	ors Soil	Water	Remarks
Continuous release.	365		98 %	1 %	1 %	ESVOC spERC 8.3b.v1

Conditions and measures related to municipal sewage treatment plant						
Size of municipal sewage system/treatment plant (m³/d):						
Discharge rate: 2.000 m3/d						
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 89,1 %						
Conditions and measures related to external treatment	stwasta far dianagal					
Conditions and measures related to external treatment (of waste for disposal					
Fraction of used amount transferred to external waste treatment:						

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 regulations.	should comply with applicable local and/or national			

Section 3. Exposure estimation

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 lev	vel RCR	Method	Remarks
_				



Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	

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	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) Mixing operations (open systems)

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing Rolling, Brushing

©COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC11: Non industrial spraying Spraying

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m ³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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	0,00054 mg/L	0,003	Used EUSES model.	
Seawater	0,000047 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg dwt	0,011	Used EUSES model.	
Saltwater Sediment	0,00094 mg/kg dwt	0,01	Used EUSES model.	
Soil	0,0003 mg/kg dwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,181 mg/L	0,0001	Used EUSES model.	

Section 4 Guidance to check compliance with the exposure scenario ©COPY RIGHT 2014 BY EASTMAN CHEMICAL COMPANY



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 (http://cefic.org/en/reach-
	for-industries-libraries.html).ries-libraries.html).
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC qu	of his site by comparing site specif ic data with def aults used in the exposure assessment. The site Jotient.
$\frac{\mathrm{m_{sperc}}*(1-\mathrm{E_{er,sp}})}{\mathrm{DF_{sp}}}$	$\frac{1}{P_{\text{ERC}}} \sum_{i=1}^{N} \frac{F_{\text{release,spERC}}}{F_{\text{release,spERC}}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$
mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease,,spERC: Initial release fraction in spERC DFspERC: dilution f actor 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 f actor of STP effluent in river	



Exposure scenario VI. Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities., Consumer use

Section 1: Exposure scenario	
Sector(s) of Use	SU21: Consumer uses: Private households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario

Risk management measures (RMM)

PC9a_1: Waterborne latex wall paint	Risk management measures (RMM)
	Covers concentrations up to1, %
	Covers use up to365, day s per y ear
	Covers use up toone time per day
	Covers skin contact area up to428 cm2
	For each use event, covers use amounts up to2760, grams
	Covers use in room size of20, m3
	Covers exposure up to2.2, hr/event

PC9a_2: Solv ent rich, high solid, water borne paint	Risk management measures (RMM)
	Covers concentrations up to4, %
	Covers use up to 365, days per year
	Covers use up toone time per day
	Covers skin contact area up to428 cm2
	For each use event, covers use amounts up to744, grams
	Covers use in room size of20, m3
	Covers exposure up to2.2, hr/event

PC9a_3: Aerosol spray can	Risk management measures (RMM)			
	Covers concentrations up to17, %			
	Covers use up to365, day s per y ear			
	Covers use up toone time per day			
	For each use event, covers use amounts up to215, grams			
	Covers use in room size of34, m3			



	Covers exposure up to0.33, hr/event		
PC9a_4: Removers (paint-, glue-, wall paper-, sealant- remover)	Risk management measures (RMM)		
	Covers concentrations up to6, %		
	Covers use up to 365, days per year		
	Covers use up toone time per day		
	Covers skin contact area up to857.5, cm2		
	For each use event, covers use amounts up to491, grams		
	Covers use in room size of20, m3		
	Covers exposure up to2, hr/event		

2.2.Control of environmental exposure

from site:

Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release	none

Environment factors not influenced by risk management		
Flow rate of receiving surface water (m ³ /d):	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 m	neasures to re	duce or limit c	lischarges, ai	r emissions an	d releases to	soil
Soil		Prevent exposure of soil using protective covers.				
Water		Do not pour	down the drair	۱.		
Amounts used: Daily amount per	site	0,00027 toni	nes/day			
Amounts used: Fraction of main s local environment	ource to	0,0005				
Frequency and duration of use: C process:	ontinuous	365 day s/y ear Dispersiv e use.				
Other given operational condition	s affecting en	vironmental e	xposure			
Other given operational condition type	s affecting en Emission d (days/year)	vironmental e ays	xposure Emission fa Air	actors Soil	Water	Remarks
Other given operational condition type Continuous release.	s affecting en Emission d (days/year) 365	vironmental e: ays	xposure Emission fa Air 98,5 %	Soil 0,5 %	Water 1 %	Remarks ESVOC spERC 8.3c.v1
Other given operational condition type Continuous release.	s affecting en Emission d (days/year) 365	vironmental e ays	xposure Emission fa Air 98,5 %	actors Soil 0,5 %	Water 1 %	Remarks ESVOC spERC 8.3c.v1
Other given operational condition type Continuous release. Conditions and measures related to	s affecting en Emission d (days/year) 365 co municipal s	vironmental e ays ewage treatme	xposure Emission fa Air 98,5 % ent plant	actors Soil 0,5 %	Water 1 %	Remarks ESVOC spERC 8.3c.v1
Other given operational condition type Continuous release. Conditions and measures related to Size of municipal sewage system/t	s affecting en Emission d (days/year) 365 to municipal s reatment plar	vironmental e ays ewage treatmont t (m³/d):	xposure Emission fa Air 98,5 % ent plant	actors Soil 0,5 %	Water 1 %	Remarks ESVOC spERC 8.3c.v1
Other given operational condition type Continuous release. Conditions and measures related to Size of municipal sewage system/to Discharge rate:	s affecting en Emission d (days/year) 365 to municipal s reatment plar	ewage treatmental examples and the second se	xposure Emission fa Air 98,5 % ent plant 00 m3/d	actors Soil 0,5 %	Water	Remarks ESVOC spERC 8.3c.v1
Other given operational condition type Continuous release. Conditions and measures related to Size of municipal sewage system/to Discharge rate: Total efficiency of removal from wast	s affecting en Emission d (days/year) 365 comunicipal s reatment plar	ewage treatmont it (m³/d): 2.000 site and off site	xposure Emission fa Air 98,5 % ent plant 00 m3/d e (domestic tre	actors Soil 0,5 % atment plant) R	Water 1 % MMs (%): 89,1	Remarks ESVOC spERC 8.3c.v1

Conditions and measures related to external t	reatment 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



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.

PC9a_1: Waterborne latex wall paint

	Exposure level	RCR	Method	Remarks
Inhalation	77,26 mg/m³	0,75	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,75	Used CHESAR model.	

PC9a_2: Solv ent rich, high solid, water borne paint

	Exposure level	RCR	Method	Remarks
Inhalation	77,62 mg/m³	0,76	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,76	Used CHESAR model.	

PC9a_3: Aerosol spray can

	Exposure level	RCR	Method	Remarks
Inhalation	11,66 mg/m³	0,001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,11	Used CHESAR model.	

PC9a_4: Removers (paint-, glue-, wall paper-, sealant-remover)

		Exposure level	RCR	Method	Remarks
Inha	lation	71,48 mg/m³	0,7	Used CHESAR model.	
Dern	nal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Vario	ous Routes		0,7	Used CHESAR model.	

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	0,000522 mg/L	0,003	Used EUSES model.	
Seawater	0,000045 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000907 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000089 mg/kg dwt	0,00098	Used EUSES model.	
Sewage Treatment Plant	0,000147 mg/L	0,0001	Used EUSES model.	

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 (http://cefic.org/en/reach-				
	jor-industries-ubraries.ntmu).ries-ubraries.ntmi).				
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC q	f his site by comparing site specific data with defaults used in the exposure assessment. The site otient.				
$\frac{\mathrm{m_{spERC}}*(1-\mathrm{E_{ER,sp}})}{\mathrm{DF_{sp}}}$	$\sum_{\text{DERC}} F_{\text{release,spERC}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$				
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. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Industrial use

Section 1: Exposure scenario Sector(s) of Use SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU8: Manuf acture of bulk, large scale chemicals (including petroleum products) SU9: Manuf acture of fine chemicals List of names of contributing worker scenarios and corresponding PROCs PROC1. PROC2. PROC3. PROC4. PROC7. PROC8a. PROC8b. PROC10. PROC13. Name of contributing environmental scenario and corresponding ERC ERC4 Section 2: Control of Exposure 15 LP

Thysical form of the product.	inquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure							
Area of use	Room size:	Temperature:	Ventilation rate	Remarks			
Indoor use.	20 m3	25 °C		Liquid, v apour pressure 0,5 - 10 kPa at STP.			

Frequency and duration of use Duration			Frequency of use:		Remarks		
Exposure time 480 min			5 day s/week				
Name of contributing exposure so	enario		Ris	sk managei	ment measures (RMM)		
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.					
General exposures (closed systems), Use in contained batch processes:		No other specific measures identified.					
Bulk transfers, internal:		No other specific measures identified.					
Spraying:		Provide extract ventilation to points where emissions occur.					
Equipment cleaning and maintenance:		No other specific measures identified.					
Material transfers, Transport:		No other specific measures identified.					
Rolling, Brushing:		No other specific measures identified.					
Dipping, immersion and pouring:		No other specific measures identified.					



Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk managemer	nt
Flow rate of receiving surface water (m ³ /d):	18.000 m3/d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Technical onsite conditions and m	neasures to rea	duce or limit c	discharges, a	air emissions a	nd releases to s	soil	
Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.						
Water	Prev ent env	Prevent environmental discharge consistent with regulatory requirements.					
	100 / /						
Amounts used: Annual amount pe	er site	100 tonnes/o	day				
Amounts used: Fraction of EU tonnage used in region:							
Amounts used: Daily amount per	site	5 tonnes/day					
Msafe		Daily amount per site: 5 tonnes/day					
Frequency and duration of use: C process:	ontinuous	300 day s/y ear Emission day s (day s/year):					
Other given operational condition	s affecting env	/ironmental e	xposure				
Emission d		days Emission factors Bemerke		Pemarks			
type	(days/year):	(days/year):		Soil	Water	Remarks	
Continuous release. 300			30 %	0 %	0,01 %	ESVOC spERC 4.4a.v1	

Conditions and measures related to municipal sewage treatment plant				
Size of municipal sewage system/treatment plant (m³/d):				
Discharge rate: 2.000 m3/d				
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 89,1 %				

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 regulations.	should comply with applicable local and/or national						

Section 3. Exposure estimation

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	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	



	Various Routes		0,0001	Used CHESAR model.	
PRO	C2: Use in closed, continuo ction	us process with occasional co	ontrolled expo	sure General exposures (closed systems), Cont	linuous process, with sample

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC7: Industrial spraying Spraying

	Exposure level	RCR	Method	Remarks
Inhalation	60,5 mg/m³	0,126	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,126	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing Rolling, Brushing

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	



Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m ³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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.

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,003 mg/L	0,018	Used EUSES model.	
Seawater	0,000316 mg/L	0,018	Used EUSES model.	
Freshwater Sediment	0,065 mg/kg dwt	0,066	Used EUSES model.	
Saltwater Sediment	0,006 mg/kg dwt	0,065	Used EUSES model.	
Soil	0,014 mg/kg dwt	0,151	Used EUSES model.	
Sewage Treatment Plant	0,027 mg/L	0,000764	Used EUSES model.	

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 (http://cefic.org/en/red for-industries-libraries.html).ries-libraries.html).		
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC	of his site by comparing site specific data with defaults used in the exposure assessment. The site quotient.		
$\mathrm{m_{spERC}}$ *(1 - $\mathrm{E_{ER}}$	$_{spERC}) * F_{release, spERC} > m_{site} * (1 - E_{ER, site}) * F_{release, site}$		
DF	spERC 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 DEsite: dilution factor of STP effluent in river			



Exposure scenario VIII. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use

Section 1: Exposure scenario	
Sector(s) of Use	SU22: Prof essional uses: Public domain (administration, education, entertainment, services, craftsmen)
List of names of contributing worker scenarios and corresponding PROCs	PROC1. PROC2. PROC3. PROC4. PROC8a. PROC8b. PROC10. PROC11. PROC13.
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure					
Area of use	Room size:	Temperature:	Ventilation rate	Remarks	
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.	

Frequency and duration of use	Duration		Frequency of use:	1	Remarks	
Exposure time	480 min		5 day s/week			
Name of contributing exposure s	scenario	Risk management measures (RMM)				
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.				
General exposures (closed systems), Use in contained batch processes:		No other specific measures identified.				
Bulk transfers, internal:		No other specific measures identified.				
Equipment cleaning and maintenance		Limit the substance content in the product to 25 %.				
Material transfers, Transport:		No other specific measures identified.				
Rolling, Brushing:		Limit the substance content in the product to 25 %.				
Spraying:		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:		Limit the substance content in the product to 25 %.				



Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk managemer	nt
Flow rate of receiving surface water (m ³ /d):	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 m	easures to re	duce or limit o	discharges,	air emissions	and releases to s	soil	
Air		Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.					
Water		Prev ent env	ironmental d	ischarge consi	stent with regulator	ry requirements.	
Amounts used: Daily amount per s	site	0,00027 ton	0,00027 tonnes/day				
Amounts used: Fraction of main s local environment	ource to	0,0005					
Frequency and duration of use: Continuous process:		365 days/ye	365 day s/y ear Dispersiv e use.				
Other given operational condition	s affecting en	vironmental e	xposure				
type	Emission d	lays	Emission	factors		Remarks	
362	(days/year):		Air	Soil	Water	Romanio	
Continuous release.	365		2 %	0 %	0,001 %	ESVOC spERC 8.4b.v1	
Conditions and measures related t							
Conditions and measures related t	o municipal s	sewage treatm	ent plant				
Size of municipal sewage system/t	reatment plai	nt (m³/d):					
Discharge rate:		2.00	2.000 m3/d				
Total efficiency of removal from wastewater after onsite and offsite (dome				reatment plant) RMMs (%): 89,1 9	%	
-							
Conditions and measures related to	o external tre	atment of was	te for dispo	sal			
Fraction of used amount transferre	ed to external	waste treatme	ent:		Demonto		
Suitable waste treatment		Treatment effe	ctiveness		Remarks		
External treatment and disposal of wa should comply with applicable local a national regulations.	and disposal of waste applicable local and/or 5.						

Section 3. Exposure estimation

Waste Recovery

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.

External recovery and recycling of waste should comply with applicable local and/or national

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

regulations.

	Exposure level	RCR	Method	Remarks
Inhalation	0,048 mg/m ³	0,0001	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,0001	Used CHESAR model.	



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	96,8 mg/m³	0,202	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,202	Used CHESAR model.	

PROC3: Use in closed batch process (synthesis or formulation) General exposures (closed systems), Use in contained batch processes

	Exposure level	RCR	Method	Remarks
Inhalation	121 mg/m ³	0,252	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,252	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC10: Roller application or brushing Rolling, Brushing

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC11: Non industrial spraying Spraying

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

©COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



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

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

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	0,000507 mg/L	0,003	Used EUSES model.	
Seawater	0,000044 mg/L	0,002	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,01	Used EUSES model.	
Saltwater Sediment	0,000878 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000034 mg/kg dwt	0,00038	Used EUSES model.	
Sewage Treatment Plant	0,000001 mg/L	0,00001	Used EUSES model.	

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 (http://cefic.org/en/reach- for-industries-libraries.html).ries-libraries.html).
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC qu	of his site by comparing site specific data with defaults used in the exposure assessment. The site Jotient.
$\frac{\mathrm{m}_{\mathrm{spERC}}*(1-\mathrm{E}_{\mathrm{ER,sp}})}{\mathrm{DF}_{\mathrm{sp}}}$	$\sum_{\text{DERC}} F_{\text{release,spERC}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$
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 IX. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Consumer use

Section 1: Exposure scenario	
Sector(s) of Use	SU21: Consumer uses: Priv ate households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and corresponding ERC	ERC8a

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario

Risk management measures (RMM)

PC3_1: Air care, instant action (aerosol sprays)	Risk management measures (RMM)
	Covers concentrations up to50, %
	Covers use up to365, days per year
	Covers use up to1, times/day
	For each use event, covers use amounts up to0.1, grams
	Covers use in room size of20, m3
	Covers exposure up to0.25, hr/event

PC3_2: Air care, continuous action (solid and liquid)	Risk management measures (RMM)		
	Covers concentrations up to10, %		
	Covers use up to365, days per year		
	Covers use up toone time per day		
	Covers skin contact area up to35.75 cm2		
	For each use event, covers use amounts up to0.48 g		
	Covers use in room size of20, m3		
	Covers exposure up to8 hours, per event		

PC35_1: Laundry and dish washing products	Risk management measures (RMM)	
	Covers concentrations up to5, %	
	Covers use up to365, day s per y ear	
	Covers use up toone time per day	
	Covers skin contact area up to857.5, cm2	
	For each use event, covers use amounts up to15, grams	



.

	Covers use in room size of20, m3
	Covers exposure up to0.5, hr/event
PC35_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	Risk management measures (RMM)
	Covers concentrations up to5, %
	Covers use up to365, days per year
	Covers use up toone time per day
	Covers skin contact area up to857.5, cm2
	For each use event, covers use amounts up to27, grams
	Covers use in room size of20, m3
	Covers exposure up to0.33, hr/event
PC35_3: Cleaners, trigger sprays (all purpose cleaners, sabitary products glass cleaners)	Risk management measures (RMM)

sanitary products, glass cleaners)		
	Covers concentrations up to15, %	
	Covers use up to365, days per year	
	Covers use up toone time per day	
	Covers skin contact area up to428 cm2	
	For each use event, covers use amounts up to35, grams	
	Covers use in room size of20, m3	
	Covers exposure up to0.17 hours	

2.2.Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level	See chapter 8 of the safety data sheet (Environmental exposure controls).
(source) to prevent release	
	·
Organisational measures to prevent/limit release	none
from site:	
Environment factors not influenced by risk manageme	nt
Flow rate of receiving surface water (m ³ /d):	18.000 m3/d
Local freshwater dilution factor:	10

100

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

Local marine water dilution factor:

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil						
Soil		Prev ent exp	Prevent exposure of soil using protective covers.			
Water		Do not pour	down the drai	n.		
Amounts used: Daily amount per s	site	0,00027 ton	nes/day			
Amounts used: Fraction of main s local environment	ource to	0,0005				
Frequency and duration of use: C	ontinuous	365 day s/y ear Emission day s (day s/year):				
process:						
Other given operational conditions affecting environmental exposure						
type	Emission d	on days Emission factors Remarks				Remarks
360	(days/year):		Air	Soil	Water	Koniariko
Continuous release.	365	95 % 2,5 % 2,5 %			ESVOC spERC 8.4c.v1	
	•		-	•	•	

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d):

©COPYRIGHT 2014 BY EASTMAN CHEMICAL COMPANY



Discharge rate:	2.000 m3/d	2.000 m3/d			
Total efficiency of removal from wastewater after	onsite and offsite (domestic treatmen	t plant) RMMs (%): 89,1 %			
Conditions and measures related to external t	Conditions and measures related to external treatment of waste for disposal				
Fraction of used amount transferred to extern Suitable waste treatment	al 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 v regulations.	rnal recovery and recycling of waste should comply with applicable local and/or national lations.			

Section 3. Exposure estimation

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.

PC3_1: Air care, instant action (aerosol sprays)

	Exposure level	RCR	Method	Remarks
Inhalation	0,02 mg/kg/day	0	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0	Used CHESAR model.	

PC3_2: Air care, continuous action (solid and liquid)

	Exposure level	RCR	Method	Remarks
Inhalation	0,17 mg/m³	0	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0	Used CHESAR model.	

PC35_1: Laundry and dish washing products

	Exposure level	RCR	Method	Remarks
Inhalation	0,67 mg/m³	0,01	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,01	Used CHESAR model.	

PC35_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Г		Exposure level	RCR	Method	Remarks
	Inhalation	0,84 mg/m ³	0,01	Used CHESAR model.	
	Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
	Various Routes		0,01	Used CHESAR model.	

PC35_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

	Exposure level	RCR	Method	Remarks
Inhalation	1,77 mg/m³	0,02	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,02	Used CHESAR model.	



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	0,000544 mg/L	0,003	Used EUSES model.	
Seawater	0,000048 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg wwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000952 mg/kg wwt	0,01	Used EUSES model.	
Soil	0,000171 mg/kg wwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,000368 mg/L	0,00001	Used EUSES model.	

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 (http://cefic.org/en/reach- for-industries-libraries.html).ries-libraries.html).
Scaling: The downstream user can check the compliance of specific quotient should be inferior or equal to the spERC qu	of his site by comparing site specif ic data with def aults used in the exposure assessment. The site Jotient.
$\frac{m_{spERC} * (1 - E_{ER,sp})}{DF_{sp}}$ mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease, spERC: Initial release fraction in spERC DF spERC: 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 DF site: dilution factor of STP effluent in river	$\frac{D_{\text{DERC}} + F_{\text{release,spERC}}}{D_{\text{DERC}}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$



Exposure scenario X. Use of the substance within laboratory settings within closed or contained systems including incidental exposures during material transfers and equipment cleaning, Industrial use

Section 1: Exposure scenario	
Sector(s) of Use	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	PROC10. PROC15.
Name of contributing environmental scenario and corresponding ERC	ERC4
Section 2: Control of Exposure	

Physical form of the product: liquid Vapour pressure: 15 hPa Process temperature: 20 °C Remarks not relev ant Concentration of the substance in a mixture: Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure							
Area of use	Room size:	Temperature:	Ventilation rate	Remarks			
Indoor use.	20 m3	25 °C		Liquid, v apour pressure 0,5 - 10 kPa at STP.			

Frequency and duration of use	Duration		Frequency of use:	Remarks	
Exposure time	480 min		5 day s/week		
Name of contributing exposure scenario		Risk management measures (RMM)			
Rolling, Brushing:		No other specific measures identified.			
Laboratory activities:		No other specific measures identified.			

2.2 Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
	·
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk management	nt
Flow rate of receiving surface water (m ³ /d):	18.000 m3/d
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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



Air	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.						
Water	Prev ent env	Prevent environmental discharge consistent with regulatory requirements.					
Amounts used: Annual amount pe	1 tonnes/yr						
Amounts used: Fraction of EU tonnage used in region:		1					
Amounts used: Daily amount per s	site	0,5 tonnes/c	day				
Msafe		Daily amour	nt per site: 0,0	05 tonnes/day	/		
Frequency and duration of use: Continuous process:		300 days/ye	300 day s/y ear Emission day s (day s/year):				
Other given operational condition	s affecting er	nvironmental e	xposure	la oto ro			
type	(davs/vear	i: Air Soil		Soil	Water		Remarks
Continuous release.	300	,	2,5 %	0,01 %	2 %	ĺ	ESVOC spERC 4.24v1
Conditions and measures related t	o municipal	sewage treatm	ent plant				
Size of municipal sewage system/t	reatment pla	ant (m³/d):	؛ (m³/d):				
Discharge rate:		2.00	2.000 m3/d				
Total efficiency of removal from wast	ewater after o	nsite and off site (domestic treatment plant) RMMs (%): 89,1 %					
Conditions and measures related t	o external tro	eatment of was	te for dispos	sal			
Fraction of used amount transferre	I waste treatme	I waste treatment:					
Suitable waste treatment	Treatment effectiveness			Remarks			
External treatment and disposal of was should comply with applicable local a national regulations.							
Waste Recovery		External recovery and recycling of waste should comply with applicable local and/or national regulations.					

Section 3. Exposure estimation

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 Rolling, Brushing

	Exposure level	RCR	Method	Remarks
Inhalation	242 mg/m³	0,504	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,504	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

	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.
--	-------------------	---

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles



Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,006 mg/L	0,033	Used EUSES model.	
Seawater	0,000588 mg/L	0,033	Used EUSES model.	
Freshwater Sediment	0,119 mg/kg dwt	0,121	Used EUSES model.	
Saltwater Sediment	0,012 mg/kg dwt	0,12	Used EUSES model.	
Soil	0,02 mg/kg dwt	0,225	Used EUSES model.	
Sewage Treatment Plant	0,054 mg/L	0,002	Used EUSES model.	

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 (http://cefic.org/en/reach- for-industries-libraries.html).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 specific quotient should be inferior or equal to the spERC quotient.					
$\frac{m_{spERC} * (1 - E_{ER,spERC}) * F_{release,spERC}}{DF_{spERC}} \ge \frac{m_{site} * (1 - E_{ER,site}) * F_{release,site}}{DF_{site}}$					
mspERC: Substance use rate in spERC EER,spERC: Efficacy of RMM in spERC Frelease,.spERC: Initial release fraction in spERC DFspERC: dilution f actor of STP effluent in riv er msite: Substance use rate at site EER,site: Efficacy of RMM at site Frelease,.site: Initial release fraction at site DFsite: dilution f actor of STP effluent in riv er					



Exposure scenario XI. Covers the use as a component of cleaning products within closed or contained systems including incidental exposures during transfer from storage, mixing/diluting in the preparatory phase and cleaning activities, related equipment cleaning and maintenance., Professional use

rof essional uses: Public domain (administration, education, entertainment, services, an)
). PROC15.

Section 2: Control of Exposure

Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Other given operational conditions affecting workers exposure							
Area of use	Room size:	Temperature:	Ventilation rate	Remarks			
Indoor use.	20 m3	25 °C		Liquid, vapour pressure 0,5 - 10 kPa at STP.			

Frequency and duration of use Duration		Frequency of use:		Remarks	
Exposure time 480 min		5 day s/week			
Name of contributing exposure scenario			Risk management measures (RMM)		
Rolling, Brushing:		Limit the substance content in the product to 25 %.			
Laboratory activities:		No other specific measures identified.			

2.2.Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release	none
from site:	
Environment factors not influenced by risk management	nt
Flow rate of receiving surface water (m ³ /d):	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	Treatment of air emissions is not required for the purposes of REACH compliance but may be needed to comply with other legislation.					
Water	Prev ent env	ironmental di	scharge consist	ent with regulate	ory requirements.	
Amounts used: Daily amou	Int per site	0,000001 to	onnes/day			
Amounts used: Fraction of local environment	main source to	0,0005	-			
Frequency and duration of process:	use: Continuous	365 days/y	ear Dispersiv	e use.		
Other given operational con	nditions affecting en	vironmental e	exposure			
type	Emission d (davs/vear)	Emission days Emission factors Remarks				Remarks
Continuous release.	365		50 %	0 %	50 %	ESVOC spERC 8.17.v1
Conditions and measures r	elated to municipal s	ewage treatm	ent plant	•		
Size of municipal sewage s	ystem/treatment plar	nt (m³/a):	<u> </u>			
Discharge rate:		2.0	00 m3/d			
Total efficiency of removal fro	om wastewater after or	isite and offsit	e (domestic ti	reatment plant) F	RMMs (%): 89,1	%
Conditions and measures re	elated to external trea	atment of was	te for dispo	sal		

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 regulations.	should comply with applicable local and/or national					

Section 3. Exposure estimation

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 Rolling, Brushing

	Exposure level	RCR	Method	Remarks
Inhalation	290,4 mg/m ³	0,605	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,605	Used CHESAR model.	

PROC15: Use as laboratory reagent Laboratory activities

	Exposure level	RCR	Method	Remarks
Inhalation	48,4 mg/m³	0,101	Used CHESAR model.	
Dermal	0 mg/kg/day	0	Qualitative approach used to conclude safe use.	
Various Routes		0,101	Used CHESAR model.	

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	0,000507 mg/L	0,003	Used EUSES model.	



Seawater	0,000044 mg/L	0,002	Used EUSES model.	
Freshwater Sediment	0,01 mg/kg dwt	0,01	Used EUSES model.	
Saltwater Sediment	0,000879 mg/kg dwt	0,009	Used EUSES model.	
Soil	0,000035 mg/kg dwt	0,0004	Used EUSES model.	
Sewage Treatment Plant	0,000004 mg/L	0,00001	Used EUSES model.	

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 (http://cefic.org/en/reach- for-industries-libraries.html).ries-libraries.html).
Scaling: The downstream user can check the compliance specific quotient should be inferior or equal to the spERC q	of his site by comparing site specif ic data with defaults used in the exposure assessment. The site uotient.
$\frac{\mathrm{m_{sperc}}*(1-\mathrm{E_{er,s}})}{\mathrm{DF_s}}$	$\frac{1}{P_{\text{pERC}}} * F_{\text{release,spERC}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$
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 riv er 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 riv er	



Exposure scenario XII. Other consumer uses

Section 1: Exposure scenario	
Sector(s) of Use	SU21: Consumer uses: Private households (= general public = consumers)
List of names of contributing worker scenarios and corresponding PROCs	
Name of contributing environmental scenario and	ERC8a ERC8d
corresponding ERC	
Section 2: Control of Exposure	
Physical form of the product:	liquid
Vapour pressure:	15 hPa
Process temperature:	20 °C
Remarks	not relevant
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

2.1. Control of Human Exposure

Name of contributing exposure scenario	Risk management measures (RMM)

PC28, PC39: Perfumes, Fragrances, Cosmetics, personal care products	Risk management measures (RMM)
	According to article 14 in the REACH regulation, human health need not be assessed.
2.2.Control of environmental exposure	
Risk management measures (RMM)	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 conditions and measures at process level (source) to prevent release	See chapter 8 of the safety data sheet (Environmental exposure controls).
Organisational measures to prevent/limit release from site:	none
Environment factors not influenced by risk manageme	nt
Flow rate of receiving surface water (m ³ /d):	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 ERC8d: Wide dispersive outdoor use of processing aids in open systems
Technical onsite conditions and measures to re	duce or limit discharges, air emissions and releases to soil
Soil	Prevent exposure of soil using protective covers.
Water	Do not pour down the drain.

Amounts used: Daily amount per site	0,00027 tonnes/day
Amounts used: Fraction of EU tonnage used in region:	0,0005

Frequency and duration of use: Continuous 365 day s/y ear Emission day s (day s/year):



process:						
Other given operational cond	itions affecting environmen	tal exposure				
type	Emission days	Emission factors			Bomarks	
type	(days/year):	Air	Soil	Water	Remarks	
Continuous release.	365	95 %	2,5 %	2,5 %	ESVOC spERC 8.16.v1	
					•	
Conditions and measures rela	ated to municipal sewage tre	eatment plant				
Size of municipal sewage syst	tem/treatment plant (m³/d):					
Discharge rate:		2.000 m3/d				
Total efficiency of removal from	wastewater after onsite and of	fsite (domestic t	reatment plant) R	MMs (%): 88,3	%	
Conditions and measures rela	ted to external treatment of	waste for dispo	sal			
Fraction of used amount trans	sferred to external waste tre	atment:				
Suitable waste treatment	Treatment	effectiveness	R	Remarks		
External treatment and disposal should comply with applicable lo national regulations.	of waste ocal and/or					
Waste Recovery	External re regulations	External recovery and recycling of waste should comply with applicable local and/or national regulations.				

Section 3. Exposure estimation

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.

PC28, PC39: Perfumes, Fragrances, Cosmetics, personal care products

none

3.2. Environment:	Used EUSES model. When the recommended risk management measures (KMMs) 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 ERC8d: Wide dispersive outdoor use of processing aids in open systems

Compartment	PEC	Risk characterisation ratio (PEC/PNEC):	Method	Remarks
Water	0,000544 mg/L	0,003	Used EUSES model.	
Seawater	0,000048 mg/L	0,003	Used EUSES model.	
Freshwater Sediment	0,011 mg/kg wwt	0,011	Used EUSES model.	
Saltwater Sediment	0,000952 mg/kg wwt	0,01	Used EUSES model.	
Soil	0,000368 mg/kg wwt	0,002	Used EUSES model.	
Sewage Treatment Plant	0,000171 mg/L	0,00001	Used EUSES model.	

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 (http://cefic.org/en/reach- for-industries-libraries.html).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.				
$\frac{\mathrm{m_{spERC}}*(1-\mathrm{E_{ER,sp}})}{\mathrm{DF_{sp}}}$	$\frac{1}{P_{\text{pERC}}} * F_{\text{release,spERC}} \ge \frac{m_{\text{site}} * (1 - E_{\text{ER,site}}) * F_{\text{release,site}}}{DF_{\text{site}}}$			



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