

according to Regulation (EC) No. 1907/2006



GB / EN

## **TRIETHYLENETETRAMINE (TETA)**

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014

#### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE **COMPANY/UNDERTAKING**

#### **1.1 Product identifier**

Trade name	: TRIETHYLENETETRAMINE (TETA)
Substance name Index-No.	<ul> <li>Triethylenetetramine linear, cyclic and branched</li> <li>612-059-00-5</li> </ul>

#### REACH Registration Number : 01-2119487919-13-0003 1.2 Relevant identified uses of the substance or mixture and uses advised against

	<b>o w</b> ( )	
Use of the	: Specific use(s):	Refer to attached exposure
Substance/Mixture		scenario Annex.

#### 1.3 Details of the supplier of the safety data sheet

	Company	:	Akzo Nobel Functional Chemicals AB Ethylene Amines ANC Stenungsund Stenunge Allé 3 SE 444 85 Stenungsund Sweden
1.4	Telephone Telefax E-mail address <b>Emergency telephone number</b>	:	4630385000 46303770551 RegulatoryAffairs@akzonobel.com
	Emergency telephone number	:	020 99 60 00 Kemiakuten, SE +31 57 06 79 211 AkzoNobel, NL

#### **SECTION 2: HAZARDS IDENTIFICATION**

#### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No	1272/2008)
Acute	e toxicity, 4, H302
Acute	e toxicity, 4, H312
Skin	corrosion, 1B, H314
Skin	sensitisation, 1, H317
Chro	nic aquatic toxicity, 3, H412

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014

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

#### Classification (67/548/EEC, 1999/45/EC)

Corrosive, C, R34 Sensitising, Xi, R43 Dangerous for the environment, R52/53 Harmful, Xn, R21/22

GB / EN

For the full text of the R-phrases mentioned in this Section, see Section 16.

#### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008)

Symbol(s)

Signal word :	Danger	
Hazard statements :	H302 + H312	Harmful if swallowed or in contact with skin
	H314	Causes severe skin burns and eye damage.
	H317	May cause an allergic skin reaction.
	H412	Harmful to aquatic life with long lasting effects.
Precautionary statements :	Prevention:	
·	P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
	Response:	
	P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
	P310	Immediately call a POISON CENTER or doctor/ physician.

1

Hazardous components which must be list	ted on the label:
Triethylenetetramine	112-24-3
.3 Other hazards	

#### 2

No further data available.

PBT and vPvB assessment :		This substance/mixture contains no components consider	red
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Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Version 1 Revisio

Revision Date 22.11.2013

Print Date 27.02.2014

#### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

CAS-No.

: 90640-67-8

#### Hazardous substance

Chemical Name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Classification (67/548/EEC)	Concentration [%]
Triethylenetetramine		112-24-3 203-950-6 01- 2119487919- 13	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Skin Sens. 1; H317 Aquatic Chronic 3; H412	C; R34 Xn; R21/22 R43 R52-R53	100

#### The following substances have multiple CAS-number

Triethylenetetramine : 90640-67-8

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

For the full text of the R-phrases mentioned in this Section, see Section 16.

#### REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

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

#### **SECTION 4: FIRST AID MEASURES**

#### 4.1 Description of first aid measures

General advice :	Immediate medical attention is required. Move out of dangerous area. Show this safety data sheet to the doctor in attendance.
If inhaled :	If breathed in, move person into fresh air. Consult a physician after significant exposure.
In case of skin contact :	Take off contaminated clothing and shoes immediately. Rinse immediately with plenty of water. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty. If skin irritation persists, call a physician.
In case of eye contact :	Rinse with plenty of water. Get medical attention immediately. Continue to rinse during transport. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing.
	Keep eye wide open while rinsing.

Version 1	Revision Date 22.11.2013	B Print Date 27.02.2014	GB	/ EN
	Sr tis	nall amounts splashed into eyes can cause irreversik sue damage and blindness.	le	
If swallowed	I : Cl Ne Ta Do an	ean mouth with water and drink afterwards plenty of ever give anything by mouth to an unconscious perso ke victim immediately to hospital. o not induce vomiting! May cause chemical burns in r d throat.	water. n. nouth	
4.2 Most import	ant symptoms and effe	cts, both acute and delayed		
Symptoms	: co se	rrosive effects nsitising effects		
Risks	: No	o information available.		
4.3 Indication of	f any immediate medica	I attention and special treatment needed		
Treatment	: No	o information available.		

SECTION 5: FIREFIGHTING MEASURES	

#### 5.1 Extinguishing media

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.	
5.2 Special hazards arising from the substance or mixture			

Specific hazards during firefighting / Specific hazards arising from the chemical	:	Do not allow run-off from fire fighting to enter drains or water courses.
Combustion products	:	Carbon oxides nitrogen oxides (NOx)
5.3 Advice for firefighters		
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus and protective suit.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	: Use personal protective equipment. Wear respiratory protection. Ensure adequate ventilation.
6.2 Environmental precautions	
Environmental precautions	: Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

Version 1	rsion 1 Revision Date 22.11.2013		Print Date 27.02.2014	GB / EN
6.3 Methods and	d materials for co	ntainment a	and cleaning up	
Methods for cleaning up / : Soak u Methods for containment acid bi Keep in		: Soak up acid bin Keep in	o with inert absorbent material (e.g. sand der, universal binder). suitable, closed containers for disposal	d, silica gel,
6.4 Reference to	o other sections			
Additional ad	dvice	: For pers	sonal protection see section 8.	
SECTION 7: H	ANDLING AND S	STORAGE		
7.1 Precautions	for safe handling	I		
Advice on sa	afe handling	: For pers Avoid for Do not b Persons asthma should n being us Smoking applicat Dispose regulatic Avoid co	sonal protection see section 8. preathe vapours or spray mist. s with a history of skin sensitisation prob , allergies, chronic or recurrent respirato not be employed in any process in which sed. g, eating and drinking should be prohibi- ion area. e of rinse water in accordance with local ons. ontact with skin, eyes and clothing.	elems or Try disease In this mixture is ted in the and national
Advice on p fire and expl	rotection against losion	: Normal	measures for preventive fire protection.	
Deguinere en	of sale storage, i			ve ve til e te el
areas and co	ontainers	place. Reacts	with copper, aluminium, zinc and their a	illoys.
Other data		: No deco	omposition if stored and applied as direc	ted.
7.3 Specific end	use(s)			
Specific use	e(s)	: Refer to	attached exposure scenario Annex.	

#### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Control parameters

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Triethylenetetramine	Workers	Skin contact	Long-term systemic effects	0.57 mg/kg bw/day

Versior	Version 1 Revision Date 22.11.2013		Print Date 27.02	.2014	GB / EN
		Workers	Inhalation	Long-term local effects	1 mg/m3
		Consumers	Skin contact	Long-term systemic effects	0.25 mg/kg bw/day
		Consumers	Ingestion	Long-term systemic effects	0.41 mg/kg bw/day
		Consumers	Inhalation	Long-term systemic effects	0.29 mg/m3

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

Substance name	Environmental Compartment	Value
Triethylenetetramine	Fresh water	0.19 mg/l
	Marine water	0.038 mg/l
	Sediment	95.9 mg/kg dry weight
	Marine sediment	19.2 mg/kg dry weight
	Soil	19.1 mg/kg dry weight
	Sewage treatment plant	4.25 mg/l

#### 8.2 Exposure controls

#### Engineering Controls

Effective exhaust ventilation system Ensure that eyewash stations and safety showers are close to the workstation location.

#### Personal protective equipment

Respiratory protection	:	In the case of vapour formation use a respirator with an approved filter. Wear full face mask supplied with: Gas cartridge K (ammonia, green).
Hand protection	:	butyl-rubber
Eye protection	:	Tightly fitting safety goggles Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	:	Protective suit
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. Wash contaminated clothing before re-use.
Environmental exposure cont	tro	ls

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

Version 1 R	evision Date 22.11	1.2013	Print Date 27.02.2014	GB / EN
SECTION 9: PHY	SICAL AND CH	IEMICAL P	ROPERTIES	
9.1 Information on	basic physical a	and chemica	al properties	
Form		: liquid		
Colour		: light yellow	N	
Odour		: ammoniac	al	
Odour Thresho	ld	: no data av	vailable	
Safety data				
рН		: 10.7 at 1 9	% solution	
Melting point/fre	eezing point	: <-20 °C		
Boiling point/bo	iling range	: 274.6 °C		
Flash point		: 118 ℃		
Ignition temper	ature	: 335 ℃		
Evaporation rat	te	: no data av	vailable	
Flammability (s	olid, gas)	: The produ	ct is not flammable.	
Lower explosio	n limit	: no data av	vailable	
Upper explosio	n limit	: no data av	vailable	
Vapour pressu	re	: < 0.1 hPa	at 20 °C	
Relative vapou	r density	: no data av	vailable	
Density		: 980 kg/m3	∃at 20 °C	
Relative density	y	: 0.971 at 2	5 °C	
Water solubility		: > 1,000 g Very solut	/l at 20 °C ble.	
Solubility in oth	er solvents	: no data av	vailable	
Partition coeffic octanol/water	cient: n-	: log Pow: - at 20 °C	2.65	
Auto-ignition te	mperature	: 325 °C		
Decomposition	temperature	: no data av	vailable	
Viscosity, dyna	mic	: 30 mPa.s	at 20 °C	

Version 1	Revision Da	te 22.11.2013	Print Date 27.02.2014	GB / EN
Viscosity,	kinematic	: ca. 30 m	m2/s at 20 °C	
Explosive	properties	: Not explo	osive	
Oxidizing	properties	: The subs	stance or mixture is not classified as o	kidizing.

#### 9.2 Other information

This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

#### SECTION 10: STABILITY AND REACTIVITY

#### 10.1 Reactivity

Stable under normal conditions.

#### 10.2 Chemical stability

Stable under recommended storage conditions.

#### 10.3 Possibility of hazardous reactions

Heating can release hazardous gases.

#### 10.4 Conditions to avoid

Conditions to avoid	: Extremes of temperature and direct sunlight.
10.5 Incompatible materials	
Materials to avoid	<ul> <li>Reacts with copper, aluminium, zinc and their alloys.</li> <li>Strong acids and oxidizing agents</li> <li>Halogenated compounds</li> </ul>

#### **10.6 Hazardous decomposition products**

Hazardous decomposition products	: nitrogen oxides (NOx)
Thermal decomposition	: no data available

#### SECTION 11: TOXICOLOGICAL INFORMATION

Product information: Hazard Summary	
Inhalation	<ul> <li>Inhalation of aerosols may cause irritation to mucous membranes.</li> </ul>
	Thermal decomposition can lead to release of irritating gases and vapours.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin	<ul> <li>Symptoms may be delayed. Harmful in contact with skin.</li> <li>May cause an allergic skin reaction.</li> <li>Causes severe skin burns.</li> </ul>
	Causes severe skin burns.

Version 1	Revision Date 22.1	1.2013	Print Date 27.02.2014	GB / EN
Eyes		: Causes	s serious eye damage.	
Ingestic	n	: Harmfu Causes	ıl if swallowed. s burns.	
<b>Toxico</b> Further	logy Assessment information	: No furt	her data available.	
11.1 Inform	ation on toxicological	effects		
<b>Test re</b> Sensitis	<b>sult</b> sation	: May ca	use sensitisation of susceptible persor	IS.
Toxico Toxico Triethy CMR ef	logy data for the comp logy Assessment lenetetramine ffects	onents: : Teratog an anin relevar	genicity: Developmental effects have be nal study with high doses of a related s nce of those effects are currently under	een observed in alt. The investigation.
<b>Test re</b> <b>Triethy</b> Acute o	sult lenetetramine oral toxicity	: LD50: Specie	> 300 - 2,000 mg/kg s: rat	
Acute d	lermal toxicity	: LD50: Specie	> 1,000 - 2,000 mg/kg s: rabbit	
Skin irri	tation	: Result:	Causes burns.	
Sensitis	sation	: Specie Result:	s: guinea pig May cause sensitisation by skin conta	ct.
Germ c	ell mutagenicity			
Genoto	xicity in vivo	: Result: No evic	dence of genotoxic effects in vivo.	

#### SECTION 12: ECOLOGICAL INFORMATION

Product information: Ecotoxicology Assessment Results of PBT assessment	: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.	
Additional ecological information	: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.	
12.1 Toxicity		
Components:		

Version 1	Revision Date 22.7	11.20	13 Print Date 27.02.2014	GB / EN
Ecotoxic Triethyle Results o	cology Assessment enetetramine of PBT assessment	: T E T r	This substance is not considered to be a PBT (Persistent Bioaccumulation, Toxic) This substance is not considered to be vPvB (very Persis nor very Bioaccumulating)	, tent
Test res Triethyle Toxicity t	<b>ult</b> enetetramine o fish	: L E	_C50: > 100 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)	
Toxicity t aquatic ii	o daphnia and other nvertebrates	: E E S	EC50: > 10 - 100 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)	
Toxicity t	o algae	: E E S	ErC50: > 10 - 100 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae)	
12.2 Persiste	nce and degradabili	ty		
<b>Product</b> Biodegra	<b>information:</b> Idability	: F	Result: Not readily biodegradable.	
<b>Compor</b> <b>Triethyle</b> Biodegra	ents: enetetramine idability	: F N	Result: Not readily biodegradable. Method: OECD Test Guideline 302B	
12.3 Bioaccu	mulative potential			
Compor Triethyle Bioaccur	<b>ents:</b> enetetramine nulation	: r	no data available	
12.4 Mobility	in soil			
<b>Compor</b> Triethyle Mobility	ents: enetetramine	: iı	mmobile	
12.5 Results	of PBT and vPvB as	sess	sment	
Product PBT and	information: vPvB assessment	: T te V C	This substance/mixture contains no components consider o be either persistent, bioaccumulative and toxic (PBT), o very persistent and very bioaccumulative (vPvB) at levels 0.1% or higher.	red or of
Compor Triethyle PBT and	ents: enetetramine vPvB assessment	: T E T	This substance is not considered to be a PBT (Persistent Bioaccumulation, Toxic) This substance is not considered to be vPvB (very Persis	tent

Version 1 Revision	Date 22.11.2013	Print Date 27.02.2014	GB / EN
	nor very l	Bioaccumulating)	
12.6 Other adverse effect	ts		
<b>Components:</b> <b>Triethylenetetramine</b> Biochemical Oxygen Demand (BOD)	e : no data a	vailable	
SECTION 13: DISPOSA	L CONSIDERATIO	NS	
13.1 Waste treatment me	thods		
Product	: The production courses of Do not courses of Chemical Hazardou Dispose of regulation	uct should not be allowed to enter dr or the soil. ontaminate ponds, waterways or ditcl or used container. us waste of contents/container in accordance	ains, water hes with with local
Contaminated packag	ing : Empty rei Dispose o	maining contents. of as unused product.	
SECTION 14: TRANSP	ORT INFORMATIO	N	
14.1 UN number			
ADR RID IMDG-Code	: UN 2259 : UN 2259 : UN 2259 : UN 2259		
14.2 Proper shipping nar	ne		
ADR RID IMDG-Code IATA-DGR 14 3 Transport bazard cli	: TRIETHY : TRIETHY : TRIETHY : TRIETHY : Triethyler	LENETETRAMINE LENETETRAMINE LENETETRAMINE netetramine	
	<b>·</b> β		
RID IMDG-Code IATA-DGR	: 8 : 8 : 8		
14.4 Packing group			
ADR Packing group Classification Code Hazard Identification I Labels Tunnel restriction cod <b>RID</b> Packing group Classification Code Hazard Identification I Labels IMDG-Code	: II : C7 Number : 80 : 8 e : (E) : II : C7 Number : 80 : 8		

Version 1	Revision Date 22	2.11.2013	Print Date 27.02.2014	GB / EN
Packing gr Labels EmS Code	oup	: II : 8 : F-A, S-B		
IATA-DGF	R			
Packing in aircraft)	struction (cargo	: 855		
Packing in (passenge	struction r aircraft)	: 851		
Packing in	struction (LQ)	: Y840		
Packing gr	oup	: 11		
Labels		: 8		
14.5 Environm	ental hazards			
ADR				
Environme <b>RID</b>	entally hazardous	: no		
Environme	entally hazardous	: no		
IMDG-Cod	de			
Marine pol	llutant R	: no		
Environme	entally hazardous	: no		
14.6 Special p	recautions for use	er		

not applicable

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### **SECTION 15: REGULATORY INFORMATION**

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

Major Accident Legislation	Hazard : 96/82/EC not applicable
Water contamin (Germany)	ating class : WGK 2 water endangering
Notification sta	itus
CH INV	: YES. The formulation contains substances listed on the Swiss Inventory
TSCA	: YES. All chemical substances in this product are either listed on the
	TSCA Inventory or in compliance with a TSCA Inventory exemption.
DSL	: YES. All components of this product are on the Canadian DSL.
AICS	: YES. On the inventory, or in compliance with the inventory
NZIoC	: YES. On the inventory, or in compliance with the inventory
ENCS	: YES. On the inventory, or in compliance with the inventory
ISHL	: YES. On the inventory, or in compliance with the inventory
KECI	: YES. On the inventory, or in compliance with the inventory
PICCS	: YES. On the inventory, or in compliance with the inventory
IECSC	: YES. On the inventory, or in compliance with the inventory

For explanation of abbreviation see section 16.

Revision Date 22.11.2013

This product is to be considered as a substance according to EU-legislation.

substance.

Version 1

Further information

Triethylenetetramine

**15.2 Chemical Safety Assessment** 

OTHER INFORMATION
f H-Statements referred to under sections 2 and 3.
Harmful if swallowed.
Harmful in contact with skin.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Harmful to aquatic life with long lasting effects.
f R-phrases referred to under sections 2 and 3
Harmful in contact with skin and if swallowed.
Causes burns.
May cause sensitisation by skin contact.
Harmful to aquatic organisms.
Harmful to aquatic organisms, may cause long-term adverse effects in
the aquatic environment.
May cause long-term adverse effects in the aquatic environment.
ons for possible abbreviations mentioned in section 2
: PBT: Persistent, bioaccumulative and toxic.
: vPvB: Very persistent and very bioaccumulative.
: OEL: Occupational exposure limit.
on status explanation
Switzerland. New notified substances and declared preparations
United States TSCA Inventory
Canadian Domestic Substances List (DSL)
Australia Inventory of Chemical Substances (AICS)
New Zealand. Inventory of Chemical Substances
Japan. ENCS - Existing and New Chemical Substances Inventory
Japan. ISHL - Inventory of Chemical Substances (METI)
Korea. Korean Existing Chemicals Inventory (KECI)
Philippines Inventory of Chemicals and Chemical Substances

Print Date 27.02.2014

: A Chemical Safety Assessment has been carried out for this

GB / EN

#### **Further information**

**IECSC** 

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(PICCS)

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific

China. Inventory of Existing Chemical Substances in China (IECSC)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Annex :

Intermediate

Industrial formulation

Manufacture of Coatings, adhesives and inks (and powder products)

Diesel and gasoline additive

Diesel and gasoline additive

Wood protection formulations

Industrial use of Coatings and Adhesives

Professional use of coatings & adhesives

Epoxy, Polyurethane Curing Agent

Consumer use

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Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

#### 1. Short title of Exposure Scenario: Intermediate Main User Groups : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites : ERC6a: Industrial use resulting in manufacture of another **Environmental Release** substance (use of intermediates) Categories : PROC1: Use in closed process, no likelihood of exposure **Process categories** PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at nondedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent

# 2.1 Contributing scenario controlling environmental exposure for: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Amount used	
Regional use tonnage (tonnes/year):	: 4650 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 15500 kg/day
Environment factors not influenced b	y risk management
Flow rate	: 83,333.3 m3/h
Dilution Factor (River)	: 1,000
Other given operational conditions a Number of emission days per year	fecting environmental exposure : 300

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Emission or Emission or Water	r Release Factor: Air r Release Factor:	: 0.11 % : 40.3 ppm		
Emission or Provide, wit domestic w a total wast efficiency o	r Release Factor: Soil th either onsite or astewater treatment, ewater removal f (%)	: 0.01 % : > 37.4 %		
Technical con Exposure ti Compartme	ditions and measures me nt	/ Organization : Continuou : Fresh wat sediment,	nal measures us use/release er, Fresh water sediment, Marir Soil, Grassland, Sewage treatr	ne water, Marine nent plant

# 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Activity	: General exposures, Continuous process, Bulk product storage, (closed systems)
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 300 days/year
Human factors not influenced by ris Breathing volume	sk management : 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ing workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard o	s of occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves supervision controls. (Effectivene	personal protection, hygiene and health evaluation (tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.3 Contributing scenario contro continuous process with occasion	Iling worker exposure for: PROC2: Use in closed, onal controlled exposure
Activity Product characteristics	: General exposures, Process sampling

oduct characteristics		
Concentration of the Substance	:	Covers the percentage of the substance in the product up
in Mixture/Article		to 100 % (unless stated differently).
Physical Form (at time of use)	:	liquid

Version 1 Rev	ision Date 22.11.201	3	Print Date 27.02.2014	(	GB / EN
Frequency and durati Exposure duration Remarks Frequency of use	ion of use : :	< 240 min Inhalation <= 300 day	, Dermal /s/year		
Human factors not in Breathing volume	fluenced by risk : :	managemen 10 m3/day	t		
Other operational cor Outdoor / Indoor	nditions affecting :	workers ex Indoor	posure		
Technical conditions Provide extraction v %)	and measures ventilation at poir	nts where en	nissions occur. (Effe	ctiveness (of a meası	ıre): 90
Conditions and meas Wear chemically res supervision control	sures related to po sistant gloves (te s. (Effectiveness	ersonal prot sted to EN3 (of a measu	ection, hygiene and 74) in combination w re): 98 %)	health evaluation ith intensive manager	ment
2.4 Contributing sc process (synthesis	enario controllin or formulation)	ng worker o	exposure for: PRO	C3: Use in closed b	atch
Activity Product characteristi Concentration of th in Mixture/Article Physical Form (at t Frequency and durat	: cs ne Substance : ime of use) : ion of use	General ex Covers the to 100 % ( liquid	posures (closed system) e percentage of the sum of the	stems) substance in the produ ntly).	uct up
Exposure duration Remarks Frequency of use	:	< 480 min Inhalation <= 300 day	, Dermal /s/year		
Human factors not in Breathing volume	fluenced by risk : :	managemen 10 m3/day	t		
Other operational cor Outdoor / Indoor	nditions affecting :	workers ex Indoor	posure		
Technical conditions Provide extraction v %)	and measures ventilation at poir	nts where en	nissions occur. (Effe	ctiveness (of a meası	ıre): 90
Conditions and meas Wear chemically res supervision control	ures related to po sistant gloves (te s. (Effectivenes 504	ersonal prot sted to EN3 (of a measu	ection, hygiene and 74) in combination w re): 98 %)	health evaluation ith intensive manage	ment

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Version 1 Revision	on Date 22.11.2013	Print Date 27.02.2014	GB / EN
Activity Product characteristics Concentration of the in Mixture/Article Physical Form (at tim	Substance : C t te of use) : I	Material transfers Covers the percentage of the substance o 100 % (unless stated differently). iquid	in the product up
Frequency and duration Exposure duration Remarks Frequency of use	n of use : < : I : <	< 480 min nhalation, Dermal <= 300 days/year	
Human factors not influ Breathing volume	enced by risk ma : 1	anagement I0 m3/day	
Other operational cond Outdoor / Indoor	itions affecting w : I	orkers exposure ndoor	
Technical conditions an Provide extraction ver %)	nd measures ntilation at points	where emissions occur. (Effectiveness	(of a measure): 90
Conditions and measur Wear chemically resis supervision controls. Wear a respirator con 90 %)	res related to pers stant gloves (teste (Effectiveness (o forming to EN140	sonal protection, hygiene and health eva ed to EN374) in combination with intens f a measure): 98 %) 9 with Type A filter or better. (Effectivene	aluation ive management ess (of a measure):
2.6 Contributing scen batch processes for f significant contact)	ario controlling formulation of p	worker exposure for: PROC5: Mixin reparations and articles (multistage	g or blending in and/ or
Activity Product characteristics Concentration of the in Mixture/Article Physical Form (at tim	Substance : 0 t	Mixing operations (open systems) Covers the percentage of the substance o 100 % (unless stated differently).	in the product up
Frequency and duration Exposure duration Remarks Frequency of use	n of use : < :   : <	< 480 min nhalation, Dermal <= 300 days/year	
Breathing volume	ienced by risk ma : 1	lo m3/day	
Other operational cond Outdoor / Indoor	itions affecting w : I	orkers exposure ndoor	
Technical conditions an Provide extraction ver %)	nd measures ntilation at points	where emissions occur. (Effectiveness	(of a measure): 90

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

2.7 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity	: Material transfers
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
<ul> <li>Frequency and duration of use Exposure duration Remarks</li> <li>Frequency of use</li> <li>Human factors not influenced by ris Breathing volume</li> <li>Other operational conditions affection</li> <li>Outdoor / Indoor</li> </ul>	<ul> <li>: &lt; 60 min</li> <li>: Inhalation, Dermal</li> <li>: &lt;= 300 days/year</li> <li>: k management</li> <li>: 10 m3/day</li> <li>ng workers exposure</li> <li>: Indoor</li> </ul>
Technical conditions and measures Provide extraction ventilation at p %)	oints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves supervision controls. (Effectivene Wear a respirator conforming to E 95 %)	personal protection, hygiene and health evaluation (tested to EN374) in combination with intensive management ss (of a measure): 98 %) N140 with Type A filter or better. (Effectiveness (of a measure):
2.8 Contributing scenario contro substance or preparation (charg dedicated facilities	lling worker exposure for: PROC8b: Transfer of ing/ discharging) from/ to vessels/ large containers at
Activity	: Bulk transfers. Dedicated facility
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use Exposure duration Remarks	: < 240 min : Inhalation, Dermal
	21 / 126

Version 1	Revision Date 22.11.20	013	Print Date 27.02.2014	GB / EN
Frequency of u	se	: <= 300 da	ys/year	
Human factors no Breathing volu	ot influenced by risk me	k managemer : 10 m3/day	nt V	
Other operational Outdoor / Indoo	conditions affectin	ig workers ex : Indoor	posure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	ints where e	nissions occur. (Effective	ness (of a measure): 97
Conditions and m Wear chemically supervision con	easures related to / resistant gloves (t trols. (Effectivenes	personal pro ested to EN3 s (of a measu	tection, hygiene and healt 74) in combination with ir ıre): 98 %)	h evaluation Itensive management
2.9 Contributing or preparation in	scenario control nto small containe	ling worker ers (dedicat	exposure for: PROC9: 1 ed filling line, including	Fransfer of substance weighing)
Activity		: Material t	ansfers, Bulk transfers, D	edicated facility
Product character Concentration in Mixture/Artic Physical Form	ristics of the Substance le (at time of use)	: Covers th to 100 % ( : liquid	e percentage of the subst unless stated differently).	ance in the product up
Frequency and du Exposure durat Remarks Frequency of u	uration of use tion se	: < 480 min : Inhalation : <= 300 da	, Dermal ys/year	
Human factors no Breathing volu	ot influenced by risk me	k managemei : 10 m3/day	nt V	
Other operational Outdoor / Indoo	conditions affectin	ig workers ex : Indoor	posure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	ints where e	nissions occur. (Effective	ness (of a measure): 90
Conditions and m Wear chemically supervision con Wear a respirato 90 %)	easures related to / resistant gloves (t trols. (Effectivenes or conforming to EN	personal pro ested to EN3 s (of a measu 140 with Typ	tection, hygiene and healt 74) in combination with ir ıre): 98 %) be A filter or better. (Effect	h evaluation Itensive management iveness (of a measure):
2.10 Contributin reagent	g scenario contro	olling worke	r exposure for: PROC15	5: Use as laboratory
Activity Product characte	ristics	: Laborator	y activities	

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Concentra in Mixture Physical F	ation of the Substance /Article Form (at time of use)	: Cov to 1 : liqu	vers the percentage of the substance 00 % (unless stated differently). id	in the product up
Frequency a	nd duration of use			
Exposure	duration	: 15 -	60 min	
Remarks		: Inha	alation, Dermal	
Frequency	y of use	: <=:	800 days/year	
Human facto	ors not influenced by ris	k mana	gement	
Breathing	volume	: 10 r	n3/day	
Other operat	tional conditions affecti	ng work	ters exposure	
Outdoor /	Indoor	: Inde	bor	
Technical co Provide ex %)	onditions and measures traction ventilation at p	oints wl	nere emissions occur. (Effectiveness	(of a measure): 90

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

#### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC6a	EUSES		Fresh water		0.0016 mg/L	0.0085
			Fresh water		0.82 mg/kg	0.0085
			sediment		dry weight	
			Marine		0.0021 mg/L	0.055
			water			
			Marine		1.05 mg/kg	0.055
			sediment		dry weight	
			Sewage		0.196 mg/L	0.046
			treatment			
			plant			
			Soil		0.197 mg/kg	0.01
					dry weight	
			Grassland		0.279 mg/kg dry weight	0.015

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up	Long term inhalation	0.06 mg/m3	0.0609

Version 1	Revision Date 22.11.2013 Print Date 27.02.2014					
		to 100 % (unless stated differently).				
			Long term dermal	0.007 mg/kg bw/day	0.012	
			Short term inhalation	0.12 mg/m3	< 0.0001	
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m3	0.357	
			Long term dermal	0.0027 mg/kg bw/day	0.0048	
			Short term inhalation	0.73 mg/m3	0.0001	
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m3	0.183	
			Long term dermal	0.0007 mg/kg bw/day	0.0012	
			Short term inhalation	0.36 mg/m3	< 0.0001	
PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046	
			Long term dermal	0.14 mg/kg bw/day	0.2406	
			Short term inhalation	0.62 mg/m3	0.0001	
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046	
			Long term dermal	0.27 mg/kg bw/day	0.4812	
			Short term inhalation	0.6 mg/m3	0.0001	
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.37 mg/m3	0.3656	
			Long term dermal	0.27 mg/kg bw/day	0.4812	
			Short term inhalation	0.74 mg/m3	0.0001	
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.548 mg/m3	0.5484	
			Long term dermal	0.14 mg/kg bw/day	0.2406	

Version 1	Revision Date 22	2.11.2013	Print Date 27.0	)2.2014		GB / EN
				Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the pe substance in to 100 % (u differ	rcentage of the the product up nless stated ently).	Long term inhalation	0.3 mg/m3	0.3
				Long term dermal	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.62 mg/m3	0.0001
PROC15	ECETOC TRA	Covers the pe substance in to 100 % (u differ	rcentage of the the product up nless stated ently).	Long term inhalation	0.596 mg/m3	0.596
				Long term dermal	0.0007 mg/kg bw/day	0.0012
				Short term inhalation	1.2 mg/m3	0.0002

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) PROC1: Use in closed process, no likelihood of exposure

PROC15: Use as laboratory reagent

PROC2: Use in closed, continuous process with occasional controlled exposure

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

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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

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

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

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

1. Short title of Exposure Sc	enario: Industrial formulation
1. Short title of Exposure Sc Main User Groups Environmental Release Categories Process categories	<ul> <li>enario: Industrial formulation</li> <li>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</li> <li>ERC2: Formulation of preparations</li> <li>PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation)</li> <li>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for</li> </ul>
	or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non- dedicated facilities
	PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	PROC15: Use as laboratory reagent

#### 2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations

Product characteristics Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Amount used	
Regional use tonnage (tonnes/year):	: 604 ton(s)/year
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 2684 kg/day
Other given operational conditions a	ffecting environmental exposure
Number of emission days per year	: 225
Emission or Release Factor: Air	: 0.11 %
Emission or Release Factor: Water	: 0%
Emission or Release Factor: Soil Remarks	: 0 % : No waste water is released to the environment

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

#### Technical conditions and measures / Organizational measures

	nousaiss, eigenizational mousaiss
Exposure time	: Continuous use/release
Compartment	: Fresh water, Fresh water sediment, Marine water, Marine
-	sediment, Soil, Grassland, Sewage treatment plant

# 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Activity	: General exposures, Continuous process, Bulk product storage, (closed systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day
Other operational conditions affecting	g workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

# 2.3 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Activity Product characteristics	: General exposures, Process sampling
Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Filysical Form (at time of use)	
Frequency and duration of use	
Exposure duration	: < 240 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day

Version 1	Revision Date 22.11.20	013	Print Date 27.02.2014	GB / EN
Other operational Outdoor / Indoo	conditions affectin r	ig workers ex : Indoor	posure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	ints where er	nissions occur. (Effec	tiveness (of a measure): 90
Organisational me Assumes a good	easures to prevent. I basic standard of	/limit release occupationa	s, dispersion and exp I hygiene is implemen	osure ited.
Conditions and m Wear chemically supervision con	easures related to resistant gloves (t trols. (Effectivenes	personal prot ested to EN3 s (of a measu	ection, hygiene and h 74) in combination wi Ire): 98 %)	ealth evaluation th intensive management
2.4 Contributing process (synthe	scenario control sis or formulatior	ling worker າ)	exposure for: PROC	3: Use in closed batch
Activity Product character Concentration of in Mixture/Artic Physical Form (	istics of the Substance le at time of use)	: General e : Covers th to 100 % ( : liquid	kposures (closed system e percentage of the su unless stated differen	tems) ubstance in the product up tly).
Frequency and du Exposure durat Remarks Frequency of us	iration of use ion se	: < 480 min : Inhalation : <= 225 da	, Dermal /s/year	
Human factors no Breathing volur	t influenced by risk ne	k managemer : 10 m3/day	t	
Other operational Outdoor / Indoo	conditions affectin	ig workers ex : Indoor	posure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	ints where er	nissions occur. (Effec	tiveness (of a measure): 90
Organisational me Assumes a good	easures to prevent I basic standard of	/limit release occupationa	s, dispersion and exp I hygiene is implemen	osure lted.
Conditions and m Wear chemically supervision con Wear a respirato 90 %)	easures related to resistant gloves (t trols. (Effectivenes r conforming to EN	personal prot ested to EN3 s (of a measu I140 with Typ	ection, hygiene and h 74) in combination wi Ire): 98 %) e A filter or better. (Ef	ealth evaluation th intensive management ifectiveness (of a measure):
2.5 Contributing other process (s	scenario control ynthesis) where	ling worker opportunity	exposure for: PROC for exposure arises	4: Use in batch and

Version 1 Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Material : Covers t to 100 % : liquid	transfers he percentage of the substance (unless stated differently).	e in the product up
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 mi : Inhalatio : <= 225 d	n n, Dermal ays/year	
Breathing volume	: 10 m3/da	ay ay	
Other operational conditions affecti Outdoor / Indoor	ng workers e : Indoor	exposure	
Technical conditions and measures Provide extraction ventilation at po %)	oints where e	emissions occur. (Effectivenes	s (of a measure): 90
Organisational measures to prevent Assumes a good basic standard o	limit releas foccupation	es, dispersion and exposure al hygiene is implemented.	
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivene Wear a respirator conforming to E 90 %)	personal pr tested to EN ss (of a meas N140 with Ty	otection, hygiene and health ev 374) in combination with intens sure): 98 %) pe A filter or better. (Effectiver	valuation sive management ness (of a measure):
2.6 Contributing scenario contro batch processes for formulation significant contact)	lling worke of preparat	r exposure for: PROC5: Mixi ions and articles (multistage	ng or blending in e and/ or

Activity	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day
Other operational conditions affectin Outdoor / Indoor	g workers exposure : Indoor

Technical conditions and measures

Version 1	Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
Provide ext %)	traction ventilation at po	ints wher	e emissions occur. (Effectivene	ss (of a measure): 90
Organisation Assumes a	nal measures to prevent good basic standard of	/limit rele occupati	ases, dispersion and exposure onal hygiene is implemented.	
Conditions a Wear chem supervisior Wear a res 90 %)	ind measures related to ically resistant gloves ( n controls. (Effectivenes pirator conforming to El	personal sested to I s (of a me 140 with	protection, hygiene and health ( EN374) in combination with inte easure): 98 %) Type A filter or better. (Effective	evaluation nsive management eness (of a measure):
2.7 Contribu substance o non-dedicat	uting scenario control or preparation (chargi ted facilities	ling worl ng/ disch	ker exposure for: PROC8a: T narging) from/ to vessels/ larg	ransfer of ge containers at
Activity Product char Concentra in Mixture/ Physical F	racteristics tion of the Substance /Article form (at time of use)	: Materi : Coverto to 100 : liquid	al transfers s the percentage of the substan % (unless stated differently).	ce in the product up
Frequency a Exposure Remarks Frequency	nd duration of use duration v of use	: < 60 m : Inhala : <= 225	nin tion, Dermal 5 days/year	
Human facto Breathing	rs not influenced by ris volume	k manage : 10 m3	ment /day	
Other operat Outdoor /	ional conditions affectir Indoor	ng worker : Indooi	s exposure	
Technical co Provide ext %)	nditions and measures traction ventilation at po	ints wher	e emissions occur. (Effectivene	ss (of a measure): 90
Organisation Assumes a	nal measures to prevent good basic standard of	/limit rele occupati	ases, dispersion and exposure onal hygiene is implemented.	
Conditions a Wear chem supervisior Wear a resp 95 %)	nd measures related to ically resistant gloves ( n controls. (Effectivenes pirator conforming to El	personal ested to I s (of a me 140 with	protection, hygiene and health ( EN374) in combination with inte easure): 98 %) Type A filter or better. (Effective	evaluation nsive management eness (of a measure):

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

2.9 Contributing scenario contro or preparation into small contain	Iling worker exposure for: PROC9: Transfer of substance ers (dedicated filling line, including weighing)	
Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)		
Organisational measures to prevent Assumes a good basic standard o	/limit releases, dispersion and exposure f occupational hygiene is implemented.	
Technical conditions and measures Provide extraction ventilation at pe %)	oints where emissions occur. (Effectiveness (of a measure): 97	
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor	
Human factors not influenced by ris Breathing volume	k management : 10 m3/day	
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 240 min : Inhalation, Dermal : <= 225 days/year	
Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Bulk transfers, Dedicated facility</li> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>	

Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affection	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Provide extraction ventilation at po	pints where emissions occur. (Effectiveness (of a measure): 90

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

%)

Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

# 2.10 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Activity Product characteristics	: Laboratory activities
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use Exposure duration Remarks Frequency of use	: 15 - 60 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90
Organisational measures to prevent Assumes a good basic standard o	/limit releases, dispersion and exposure foccupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.11 Contributing scenario contro batch processes for formulation significant contact)	olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or
Activity	: Mixing operations (open systems)
Product characteristics Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.

Version 1	Revision Date 22.11.20	)13	Print Date 27.02.2014	GB / EN
Physical Form (	at time of use)	: liquid		
Frequency and du Exposure durat Remarks Frequency of us	iration of use ion se	: < 480 min : Inhalatior : <= 225 da	ı, Dermal ys/year	
Human factors no Breathing volur	t influenced by risk ne	managemei : 10 m3/day	nt /	
Other operational Outdoor / Indoo	conditions affectin	g workers ex : Indoor	cposure	
Organisational me Assumes a good	easures to prevent I basic standard of	limit release	s, dispersion and exposure I hygiene is implemented.	
Conditions and m Wear chemically (Effectiveness (o	easures related to j resistant gloves (to of a measure): 90 %	personal pro ested to EN3 )	tection, hygiene and health 74) in combination with 'bas	evaluation sic' employee training.
2.12 Contributin substance or pro non-dedicated fa	g scenario contro eparation (chargir acilities	lling worke ng/ discharg	r exposure for: PROC8a: ging) from/ to vessels/ lar	Transfer of ge containers at
Activity		: Material t	ransfers	
Product character Concentration of in Mixture/Artic	istics of the Substance le	: Covers pe	ercentage substance in the p	product up to 2%.
Physical Form (	at time of use)	: liquid		
Frequency and du Exposure durat Remarks Frequency of us	iration of use ion se	: < 480 min : Inhalatior : <= 225 da	ı, Dermal ys/year	
Human factors no Breathing volur	t influenced by risk ne	managemei : 10 m3/day	nt /	
Other operational Outdoor / Indoo	conditions affectin	g workers ex : Indoor	posure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	ints where e	missions occur. (Effectivene	ess (of a measure): 90
Organisational me Assumes a good	easures to prevent / I basic standard of	/limit release occupationa	s, dispersion and exposure I hygiene is implemented.	

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity	: Drum and small package filling
Product characteristics Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	sk management : 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Organisational measures to preven Assumes a good basic standard o	t /limit releases, dispersion and exposure f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves (Effectiveness (of a measure): 90 °	personal protection, hygiene and health evaluation (tested to EN374) in combination with 'basic' employee training. %)
2.14 Contributing scenario contributing scenario contributing substance or preparation into sr	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing)
2.14 Contributing scenario contr substance or preparation into sr Activity Product characteristics	Folling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility
2.14 Contributing scenario contributing scenario contributing scenario contributing substance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> </ul>
2.14 Contributing scenario contrisubstance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> <li>liquid</li> </ul>
2.14 Contributing scenario contrisubstance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 225 days/year</li> </ul>
2.14 Contributing scenario contr substance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 225 days/year</li> </ul>
<ul> <li>2.14 Contributing scenario contrisubstance or preparation into sr</li> <li>Activity</li> <li>Product characteristics</li> <li>Concentration of the Substance in Mixture/Article</li> <li>Physical Form (at time of use)</li> <li>Frequency and duration of use</li> <li>Exposure duration</li> <li>Remarks</li> <li>Frequency of use</li> <li>Human factors not influenced by ris</li> <li>Breathing volume</li> <li>Other operational conditions affection</li> <li>Outdoor / Indoor</li> </ul>	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 225 days/year</li> </ul> Sk management <ul> <li>10 m3/day</li> </ul> Ing workers exposure <ul> <li>Indoor</li> </ul>
<ul> <li>2.14 Contributing scenario contrisubstance or preparation into sr</li> <li>Activity</li> <li>Product characteristics</li> <li>Concentration of the Substance in Mixture/Article</li> <li>Physical Form (at time of use)</li> <li>Frequency and duration of use</li> <li>Exposure duration</li> <li>Remarks</li> <li>Frequency of use</li> <li>Human factors not influenced by rise</li> <li>Breathing volume</li> <li>Other operational conditions affection</li> <li>Outdoor / Indoor</li> <li>Organisational measures to prevent Assumes a good basic standard operation</li> </ul>	<ul> <li>colling worker exposure for: PROC9: Transfer of mall containers (dedicated filling line, including weighing)</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 2%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 225 days/year</li> </ul> Sk management <ul> <li>10 m3/day</li> </ul> Ing workers exposure <ul> <li>Indoor</li> </ul> t/limit releases, dispersion and exposure for occupational hygiene is implemented.

	Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN
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# 2.15 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity Product characteristics	: Mixing operations (open systems)
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affectir	ng workers exposure
Outdoor / Indoor	: Indoor

Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.

# 2.16 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Organisational measures to prevent Assumes a good basic standard o	/limit releases, dispersion and exposure f occupational hygiene is implemented.
Conditions and massures related to	noregnal protection, byging and health system

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.17 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity	: Drum and small package filling
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
in Mixture/Article Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks Frequency of use	: <= 225 days/year
Human factors not influenced by ris	sk management
Breathing volume	: 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Organisational measures to prevent Assumes a good basic standard o	t /limit releases, dispersion and exposure f occupational hygiene is implemented.
2.18 Contributing scenario contr	olling worker exposure for: PROC9: Transfer of
substance or preparation into sn	nall containers (dedicated filling line, including weighing)
Activity	: Material transfers, Bulk transfers, Dedicated facility
Product characteristics Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
in Mixture/Article Physical Form (at time of use)	: liquid
Eroquanay and duration of usa	
Exposure duration	· < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	sk management
Breathing volume	$\cdot 10 \text{ m}^3/\text{day}$
	. 10 115/049
Other operational conditions affecti	ng workers exposure
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor

Assumes a good basic standard of occupational hygiene is implemented.

#### 3. Exposure estimation and reference to its source

#### Environment
Version 1	Revision Date 22	2.11.2013	Print Date 27.0	2.2014		GB / EN
Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC2	EUSES		Fresh water		0.0014 mg/L	0.0075
			Fresh water sediment		0.722 mg/kg dry weight	0.0075
			Marine water		0.0001 mg/L	0.0037
			Marine sediment		0.072 mg/kg dry weight	0.0037
			Sewage treatment plant		0 mg/L	0
			Soil		0.125 mg/kg dry weight	0.0065
			Grassland		0.135 mg/kg dry weight	0.007

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.06 mg/m3	0.0609
			Long term dermal	0.007 mg/kg bw/day	0.012
			Short term inhalation	0.12 mg/m3	< 0.0001
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0027 mg/kg bw/day	0.0048
			Short term inhalation	0.73 mg/m3	0.0001
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m3	0.183
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	0.36 mg/m3	< 0.0001
PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046

Version 1 Revision Date 22.11.2013 Print Date 2		Print Date 27.0	)2.2014		GB / EN	
				Long term dermal	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.62 mg/m3	0.0001
PROC5	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.3 mg/m3	0.3046
				Long term dermal	0.27 mg/kg bw/day	0.4812
				Short term inhalation	0.6 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.37 mg/m3	0.3656
				Long term dermal	0.27 mg/kg bw/day	0.4812
				Short term inhalation	0.74 mg/m3	0.0001
PROC8b	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.548 mg/m3	0.5484
				Long term dermal	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.3 mg/m3	0.3
				Long term dermal	0.14 mg/kg bw/dav	0.2406
				Short term inhalation	0.62 mg/m3	0.0001
PROC15	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.596 mg/m3	0.596
				Long term dermal	0.0007 mg/kg bw/day	0.0012
				Short term inhalation	1.2 mg/m3	0.0002
PROC5	ECETOC TRA	Covers per in the p	centage substance oduct up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			• • • • • • • • • • • • • • • • • • •	Long term dermal	0.0274 mg/kg bw/day	0.0481
				Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers per in the pi	centage substance oduct up to 2%.	Long term inhalation	0.119 mg/m3	0.119

Version 1	Revision Date 22	2.11.2013 Print Date 27.0	2.2014		GB / EN
			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	0.243 mg/m3	0.0004
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.002 mg/kg bw/day	0.005
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.0137 mg/kg bw/day	0.024
			Short term inhalation	1.22 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m3	0.297
			Long term dermal	0.014 mg/kg bw/day	0.0241
			Short term inhalation	1.52 mg/m3	0.0003
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12

ERC2: Formulation of preparations

PROC1: Use in closed process, no likelihood of exposure

PROC15: Use as laboratory reagent

PROC2: Use in closed, continuous process with occasional controlled exposure

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

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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

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

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

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

#### 1. Short title of Exposure Scenario: Manufacture of Coatings, adhesives and inks (and powder products)

Main User Groups : S	U 3: Industrial uses: Uses of substances as such or in reparations at industrial sites
Environmental Release : E Categories	RC2: Formulation of preparations
Categories Process categories : P P O P fc P W P fc O P d d d d d C C C C C C C C C C C C C C	ROC1: Use in closed process, no likelihood of exposure ROC2: Use in closed, continuous process with ccasional controlled exposure ROC3: Use in closed batch process (synthesis or ormulation) ROC4: Use in batch and other process (synthesis) where opportunity for exposure arises ROC5: Mixing or blending in batch processes for ormulation of preparations and articles (multistage and/ r significant contact) ROC8a: Transfer of substance or preparation (charging/ ischarging) from/ to vessels/ large containers at non- edicated facilities ROC8b: Transfer of substance or preparation (charging/ ischarging) from/ to vessels/ large containers at edicated facilities ROC9: Transfer of substance or preparation into small ontainers (dedicated filling line, including weighing) PROC1: Use as laboratory reagent

#### 2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations

Regional use tonnage       : 2560 ton(s)/year         (tonnes/year):       :         Fraction of Regional tonnage       : 100 %         used locally:       :         Maximum daily site tonnage       : 11378 kg/day         (kg/day):       :         Environment factors not influenced by risk management         Dilution Factor (River)       : 10         Dilution Factor (Coastal Areas)       : 100         Other given operational conditions affecting environmental exposure         Number of emission days per       : 225         year         Emission or Release Factor: Air       : 0.11 %         Emission or Release Factor: Soil       : 0 %	Amount used	
Fraction of Regional tonnage       : 100 %         used locally:       Maximum daily site tonnage       : 11378 kg/day         (kg/day):       : 11378 kg/day         Environment factors not influenced by risk management       Dilution Factor (River)       : 10         Dilution Factor (River)       : 10       Dilution Factor (Coastal Areas)       : 100         Other given operational conditions affecting environmental exposure       Number of emission days per       : 225         year       Emission or Release Factor: Air       : 0.11 %         Emission or Release Factor:       : 50 ppm         Water       Emission or Release Factor: Soil       : 0 %	Regional use tonnage (tonnes/year):	: 2560 ton(s)/year
Maximum daily site tonnage: 11378 kg/day (kg/day):Environment factors not influenced by risk management Dilution Factor (River): 10Dilution Factor (River): 10Dilution Factor (Coastal Areas): 100Other given operational conditions affecting environmental exposure Number of emission days per: 225 	Fraction of Regional tonnage used locally:	: 100 %
<ul> <li>Environment factors not influenced by risk management Dilution Factor (River) : 10 Dilution Factor (Coastal Areas) : 100</li> <li>Other given operational conditions affecting environmental exposure Number of emission days per : 225 year</li> <li>Emission or Release Factor: Air : 0.11 %</li> <li>Emission or Release Factor: : 50 ppm Water</li> <li>Emission or Release Factor: Soil : 0 %</li> </ul>	Maximum daily site tonnage (kg/day):	: 11378 kg/day
<ul> <li>Dilution Factor (River) : 10</li> <li>Dilution Factor (Coastal Areas) : 100</li> <li>Other given operational conditions affecting environmental exposure Number of emission days per : 225 year</li> <li>Emission or Release Factor: Air : 0.11 %</li> <li>Emission or Release Factor: : 50 ppm</li> <li>Water</li> <li>Emission or Release Factor: Soil : 0 %</li> </ul>	Environment factors not influenced	by risk management
Other given operational conditions affecting environmental exposure Number of emission days per : 225 year Emission or Release Factor: Air : 0.11 % Emission or Release Factor: : 50 ppm Water Emission or Release Factor: Soil : 0 %	Dilution Factor (River) Dilution Factor (Coastal Areas)	: 100
Number of emission days per : 225 year Emission or Release Factor: Air : 0.11 % Emission or Release Factor: : 50 ppm Water Emission or Release Factor: Soil : 0 %	Other given operational conditions a	affecting environmental exposure
Emission or Release Factor: Air : 0.11 % Emission or Release Factor: : 50 ppm Water Emission or Release Factor: Soil : 0 %	Number of emission days per year	: 225
Emission or Release Factor: : 50 ppm Water Emission or Release Factor: Soil : 0 %	Emission or Release Factor: Air	: 0.11 %
Emission or Release Factor: Soil : 0 %	Emission or Release Factor: Water	: 50 ppm
	Emission or Release Factor: Soil	: 0%

Version 1	Revision Date 22.11.2013	B Print Date 27.02.2014 GB / E
Remarks	:	SpERC: CEPE 3
Technical condit Exposure time Compartment	tions and measures / O e : :	rganizational measures Continuous use/release Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant
2.2 Contributin process, no lik	g scenario controllin elihood of exposure	g worker exposure for: PROC1: Use in closed
Activity	:	General exposures, Continuous process, Bulk product storage, (closed systems)
Product character Concentration in Mixture/Arti Physical Form	eristics of the Substance : cle n (at time of use) :	Covers the percentage of the substance in the product up to 100 % (unless stated differently). liquid
Frequency and c Exposure dura Remarks Frequency of	duration of use ation : use :	< 480 min Inhalation, Dermal <= 225 days/year
Human factors n Breathing volu	not influenced by risk m ume :	nanagement 10 m3/day
Other operationa Outdoor / Indo	al conditions affecting voor	workers exposure Indoor
Technical condit Assumes a goo	tions and measures od basic standard of oc	ccupational hygiene is implemented.
Conditions and Wear chemical supervision co	measures related to pe ly resistant gloves (tes ntrols. (Effectiveness (	rsonal protection, hygiene and health evaluation ted to EN374) in combination with intensive management of a measure): 98 %)
2.3 Contributin continuous pro	g scenario controllin ocess with occasiona	g worker exposure for: PROC2: Use in closed, I controlled exposure
Activity Product characte Concentration in Mixture/Arti Physical Form	eristics of the Substance : cle n (at time of use) :	General exposures, Process sampling Covers the percentage of the substance in the product up to 100 % (unless stated differently). liquid
Frequency and c Exposure dura Remarks Frequency of	duration of use ation : use :	< 240 min Inhalation, Dermal <= 225 days/year
Human factors n	ot influenced by risk m	nanagement

Breathing volume : 10 m3/day

Version 1	Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
Other operati Outdoor / I	ional conditions affecti ndoor	ng workers e : Indoor	xposure	
Technical co Provide ext %)	nditions and measures raction ventilation at po	oints where e	missions occur. (Effectivene	ess (of a measure): 90
Organisation Assumes a	al measures to prevent good basic standard o	/limit release	es, dispersion and exposure al hygiene is implemented.	
Conditions a Wear chem supervision	nd measures related to ically resistant gloves ( a controls. (Effectivenes	personal pro tested to EN is (of a meas	otection, hygiene and health 374) in combination with inte ure): 98 %)	evaluation Insive management
2.4 Contribu process (sy	iting scenario contro nthesis or formulatio	lling worker n)	exposure for: PROC3: Us	e in closed batch
Activity Product char Concentrat in Mixture/ Physical Fe	acteristics tion of the Substance Article orm (at time of use)	: General of : Covers the to 100 % : liquid	exposures (closed systems) ne percentage of the substar (unless stated differently).	nce in the product up
Frequency an Exposure of Remarks Frequency	nd duration of use duration of use	: < 480 mir : Inhalatio : <= 225 da	n n, Dermal ays/year	
Human facto Breathing	rs not influenced by ris volume	k manageme : 10 m3/da	nt y	
Other operati Outdoor / I	ional conditions affection ndoor	ng workers e : Indoor	xposure	
Technical co Provide ext %)	nditions and measures raction ventilation at po	oints where e	missions occur. (Effectivene	ess (of a measure): 90
Organisation Assumes a	al measures to prevent good basic standard o	/limit release foccupation	es, dispersion and exposure al hygiene is implemented.	
Conditions a Wear chem supervision Wear a resp 90 %)	nd measures related to ically resistant gloves ( controls. (Effectivenes birator conforming to El	personal pro tested to EN ss (of a meas N140 with Ty	otection, hygiene and health 374) in combination with inte ure): 98 %) pe A filter or better. (Effectiv	evaluation ensive management eness (of a measure):
2.5 Contribution 2.5 Co	iting scenario contro ss (synthesis) where	lling worker opportunity	exposure for: PROC4: Us for exposure arises	e in batch and

Version 1 Revision Date 22.17	1.2013	Print Date 27.02.2014	GB / EN
Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Materia : Covers to 100 % : liquid	l transfers the percentage of the substance % (unless stated differently).	e in the product up
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 m : Inhalati : <= 225 c	iin on, Dermal days/year	
Human factors not influenced by r Breathing volume	isk managen : 10 m3/c	nent Iay	
Other operational conditions affect Outdoor / Indoor	ting workers : Indoor	exposure	
Technical conditions and measure Provide extraction ventilation at %)	es points where	emissions occur. (Effectiveness	s (of a measure): 90
Organisational measures to preve Assumes a good basic standard	nt /limit relea of occupatio	ses, dispersion and exposure nal hygiene is implemented.	
Conditions and measures related Wear chemically resistant gloves supervision controls. (Effectiven Wear a respirator conforming to 90 %)	to personal p s (tested to El ess (of a mea EN140 with T	rotection, hygiene and health ev N374) in combination with intens asure): 98 %) ype A filter or better. (Effectiven	aluation sive management ess (of a measure):
2.6 Contributing scenario contribatch processes for formulatio significant contact)	rolling work n of prepara	er exposure for: PROC5: Mixin Itions and articles (multistage	ng or blending in and/ or
Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Mixing : Covers to 100 % : liquid	operations (open systems) the percentage of the substance % (unless stated differently).	e in the product up
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 m : Inhalati : <= 225 c	iin on, Dermal days/year	

Human factors not influenced by risk management Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

Provide extraction ventilation at po %)	Dints where emissions occur. (Effectiveness (of a measure): 90
Organisational measures to prevent Assumes a good basic standard of	/limit releases, dispersion and exposure f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes Wear a respirator conforming to Ef 90 %)	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management ss (of a measure): 98 %) N140 with Type A filter or better. (Effectiveness (of a measure):
2.7 Contributing scenario control substance or preparation (chargi non-dedicated facilities	lling worker exposure for: PROC8a: Transfer of ing/ discharging) from/ to vessels/ large containers at
Activity	· Material transfers
Product characteristics	
Concentration of the Substance	: Covers the percentage of the substance in the product up
IN MIXTURE/ARTICLE Physical Form (at time of use)	to 100 % (unless stated differently).
Frequency and duration of use	
Exposure duration	: < 60 min
Frequency of use	: <= 225 davs/vear
Human factors not influenced by risk	k management
Breatning volume	: 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90
Organisational measures to prevent Assumes a good basic standard of	/limit releases, dispersion and exposure f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes Wear a respirator conforming to El	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management ss (of a measure): 98 %) N140 with Type A filter or better. (Effectiveness (of a measure):

95 %)

Technical conditions and measures -----

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Bulk transfers, Dedicated facility</li> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>					
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 240 min : Inhalation, Dermal : <= 225 days/year					
Human factors not influenced by risk Breathing volume	x management : 10 m3/day					
Other operational conditions affectin Outdoor / Indoor	g workers exposure : Indoor					
Technical conditions and measures Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)						
Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.						
Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)						
2.9 Contributing scenario control or preparation into small contained	ling worker exposure for: PROC9: Transfer of substance ers (dedicated filling line, including weighing)					

Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Provide extraction ventilation at pe	oints where emissions occur. (Effectiveness (of a measure): 90

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

%)

Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

## 2.10 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Activity Product characteristics	: Laboratory activities
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</li> <li>liquid</li> </ul>
Frequency and duration of use Exposure duration Remarks Frequency of use	: 15 - 60 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90
Organisational measures to prevent Assumes a good basic standard o	/limit releases, dispersion and exposure foccupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management as (of a measure): 98 %)
2.11 Contributing scenario contro batch processes for formulation significant contact)	olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or
Activity	: Mixing operations (open systems)
Product characteristics Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.

Version 1 Rev	vision Date 22.11.2013	Print Date 27.02.2014	GB / EN
Physical Form (at	time of use) : liquid	I	
Frequency and durat Exposure duration Remarks Frequency of use	ion of use : < 480 : Inhala : <= 22	min ation, Dermal 5 days/year	
Human factors not ir Breathing volume	fluenced by risk manage : 10 m3	ement 3/day	
Other operational co Outdoor / Indoor	nditions affecting worke : Indoo	rs exposure or	
Organisational meas Assumes a good ba	ures to prevent /limit rele asic standard of occupat	eases, dispersion and exposure ional hygiene is implemented.	
Conditions and meas Wear chemically re (Effectiveness (of a	sures related to personal sistant gloves (tested to measure): 90 %)	Protection, hygiene and health e EN374) in combination with 'basi	valuation c' employee training.
2.12 Contributing s substance or prepa non-dedicated faci	cenario controlling wo aration (charging/ disc lities	orker exposure for: PROC8a: T harging) from/ to vessels/ larg	ransfer of e containers at
Activity Product characterist Concentration of t in Mixture/Article Physical Form (at t	: Mater ics he Substance : Cover time of use) : liquid	ial transfers rs percentage substance in the p	roduct up to 2%.
Frequency and durat Exposure duration Remarks Frequency of use	ion of use : < 480 : Inhala : <= 22	min ation, Dermal 5 days/year	
Human factors not ir Breathing volume	fluenced by risk manage : 10 m3	ement 3/day	
Other operational co Outdoor / Indoor	nditions affecting worke : Indoo	rs exposure or	
Technical conditions Provide extraction %)	and measures ventilation at points whe	re emissions occur. (Effectivenes	ss (of a measure): 90
Organisational meas	ures to prevent /limit rele	eases, dispersion and exposure	

Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity	: Drum and small package filling
Product characteristics Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Organisational measures to preven Assumes a good basic standard o	t /limit releases, dispersion and exposure f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves (Effectiveness (of a measure): 90 °	personal protection, hygiene and health evaluation (tested to EN374) in combination with 'basic' employee training. %)
2.14 Contributing scenario contributing substance or preparation into sr	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing)
2.14 Contributing scenario contributing scenario contributing scenario contributing scenario contributing substance or preparation into sr Activity	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility
2.14 Contributing scenario contributing scenario contributing scenario contributing substance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility : Covers percentage substance in the product up to 2%.
2.14 Contributing scenario contrisubstance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing): Material transfers, Bulk transfers, Dedicated facility: Covers percentage substance in the product up to 2%.: liquid
2.14 Contributing scenario contr substance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing)         : Material transfers, Bulk transfers, Dedicated facility         : Covers percentage substance in the product up to 2%.         : liquid         : <480 min
2.14 Contributing scenario contr substance or preparation into sr Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility : Covers percentage substance in the product up to 2%. : liquid : <480 min : Inhalation, Dermal : <= 225 days/year sk management : 10 m3/day
<ul> <li>2.14 Contributing scenario contrisubstance or preparation into sr</li> <li>Activity</li> <li>Product characteristics</li> <li>Concentration of the Substance in Mixture/Article</li> <li>Physical Form (at time of use)</li> <li>Frequency and duration of use</li> <li>Exposure duration</li> <li>Remarks</li> <li>Frequency of use</li> <li>Human factors not influenced by ris</li> <li>Breathing volume</li> <li>Other operational conditions affection</li> <li>Outdoor / Indoor</li> </ul>	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility : Covers percentage substance in the product up to 2%. : liquid : <480 min : Inhalation, Dermal : <= 225 days/year : the management : 10 m3/day ng workers exposure : Indoor
<ul> <li>2.14 Contributing scenario contrisubstance or preparation into sr</li> <li>Activity</li> <li>Product characteristics</li> <li>Concentration of the Substance in Mixture/Article</li> <li>Physical Form (at time of use)</li> <li>Frequency and duration of use</li> <li>Exposure duration</li> <li>Remarks</li> <li>Frequency of use</li> <li>Human factors not influenced by rise</li> <li>Breathing volume</li> <li>Other operational conditions affection</li> <li>Outdoor / Indoor</li> <li>Organisational measures to prevent Assumes a good basic standard operation</li> </ul>	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing) : Material transfers, Bulk transfers, Dedicated facility : Covers percentage substance in the product up to 2%. : liquid : <480 min : Inhalation, Dermal : <= 225 days/year : k management : 10 m3/day ng workers exposure : Indoor t/limit releases, dispersion and exposure f occupational hygiene is implemented.

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

# 2.15 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor

Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.

# 2.16 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity Product characteristics	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Organisational measures to prevent Assumes a good basic standard of	/limit releases, dispersion and exposure f occupational hygiene is implemented.
	wanted and the first burging and basility and built

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

# 2.17 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity	: Drum and small package filling
Product characteristics Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
in Mixture/Article	
Physical Form (at time of use)	: liquia
Frequency and duration of use	• < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Organisational measures to prevent Assumes a good basic standard o	t /limit releases, dispersion and exposure f occupational hygiene is implemented.
2.19 Contributing cooperio contr	alling worker experience for: PPOCO: Transfer of
substance or preparation into sr	nall containers (dedicated filling line, including weighing)
Activity	· Material transfers Bulk transfers Dedicated facility
Product characteristics	. Material transfers, built transfers, beutcateu fachity
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor

Organisational measures to prevent /limit releases, dispersion and exposure Assumes a good basic standard of occupational hygiene is implemented.

#### 3. Exposure estimation and reference to its source

#### Environment

Version 1	Revision Date 22	2.11.2013	Print Date 27.0	2.2014		GB / EN
Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC2	EUSES		Fresh water		0.019 mg/L	0.101
			Fresh water sediment		9.64 mg/kg dry weight	0.101
			Marine water		0.0019 mg/L	0.05
			Marine sediment		0.96 mg/kg dry weight	0.05
			Sewage treatment plant		0.178 mg/L	0.042
			Soil		0.16 mg/kg dry weight	0.0084
			Grassland		0.20 mg/kg dry weight	0.010

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.06 mg/m3	0.0609
			Long term dermal	0.007 mg/kg bw/day	0.012
			Short term inhalation	0.12 mg/m3	< 0.0001
PROC2	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0027 mg/kg bw/day	0.0048
			Short term inhalation	0.73 mg/m3	0.0001
PROC3	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.183 mg/m3	0.183
			Long term dermal	0.0007 mg/kg bw/day	0.0012
			Short term inhalation	0.36 mg/m3	< 0.0001
PROC4	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3046

Version 1	Revision Date 2	2.11.2013	Print Date 27.0	)2.2014		GB / EN
				Long term dermal	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.62 mg/m3	0.0001
PROC5	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.3 mg/m3	0.3046
				Long term dermal	0.27 mg/kg bw/day	0.4812
				Short term inhalation	0.6 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.37 mg/m3	0.3656
				Long term dermal	0.27 mg/kg bw/day	0.4812
				Short term inhalation	0.74 mg/m3	0.0001
PROC8b	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.548 mg/m3	0.5484
				Long term dermal	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.3 mg/m3	0.3
				Long term	0.14 mg/kg bw/day	0.2406
				Short term inhalation	0.62 mg/m3	0.0001
PROC15	ECETOC TRA	Covers the substance to 100 % di	percentage of the in the product up (unless stated fferently).	Long term inhalation	0.596 mg/m3	0.596
				Long term dermal	0.0007 mg/kg bw/day	0.0012
				Short term inhalation	1.2 mg/m3	0.0002
PROC5	ECETOC TRA	Covers per in the pr	centage substance oduct up to 2%.	Long term inhalation	0.61 mg/m3	0.61
				Long term dermal	0.0274 mg/kg bw/day	0.0481
				Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers per in the pr	centage substance oduct up to 2%.	Long term inhalation	0.1218 mg/m3	0.1218

Version 1	Revision Date 2	2.11.2013 Print Date 27.0	)2.2014		GB / EN
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m3	0.0004
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6039
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m3	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12

ERC2: Formulation of preparations

PROC1: Use in closed process, no likelihood of exposure

PROC15: Use as laboratory reagent

PROC2: Use in closed, continuous process with occasional controlled exposure

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

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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

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

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

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

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

1. Short title of Exposure Scenario: Diesel and gasoline additive		
Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Environmental Release Categories Process categories	<ul> <li>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</li> <li>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</li> <li>PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/large containers at non-dedicated facilities</li> <li>PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/large containers at dedicated facilities</li> <li>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</li> <li>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected</li> </ul>	

# 2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Amount used	
Regional use tonnage (tonnes/year):	: 1160 ton(s)/year
Fraction of Regional tonnage used locally:	: 0.05 %
Maximum daily site tonnage (kg/day):	: 1.59 kg/day
Environment factors not influenced	by risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions a	ffecting environmental exposure
Number of emission days per year	: 365
Emission or Release Factor: Air	: 0.11 %
Emission or Release Factor: Water	: 0%
Emission or Release Factor: Soil	: 0%
Remarks	: No waste water is released to the environment
Technical conditions and measures	/ Organizational measures
Exposure time	: Continuous use/release
Compartment	: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

# 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
in Mixture/Article	
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	= 240  days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Diodaning volume	
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	· Indoor
Technical conditions and measures	
Assumes a good basic standard o	f occupational hygiene is implemented.
	· · · · · · · · · · · · · · · · · · ·
Conditions and measures related to	personal protection, bygiene and health evaluation
Wear chemically resistant gloves	tested to EN374) in combination with 'basic' employee training
(Effectiveness (of a measure): 90 °	
	0)
2.3 Contributing scenario contro	Iling worker exposure for: PROC8a: Transfer of
substance or preparation (charg	ing/ discharging) from/ to vessels/ large containers at
non-dedicated facilities	
Activity	: Material transfers
Product characteristics	
Concentration of the Substance	• Covers percentage substance in the product up to 2%
in Mixture/Article	
Physical Form (at time of use)	· liquid
	- пумпи

Frequency and duration of useExposure duration: < 480 min</td>Remarks: Inhalation, DermalFrequency of use: <= 240 days/year</td>

Human factors not influenced by risk management Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

**Technical conditions and measures** 

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

%)

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Broduct characteristics	: Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 240 days/year
Human factors not influenced by ris Breathing volume	sk management : 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( (Effectiveness (of a measure): 90 %	personal protection, hygiene and health evaluation (tested to EN374) in combination with 'basic' employee training. %)
2.5 Contributing scenario contro or preparation into small contain	Iling worker exposure for: PROC9: Transfer of substance pers (dedicated filling line, including weighing)
Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility

Activity	: Material transfers, Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day

Other operational conditions affecting workers exposure

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Outdoor / I	Indoor	: Indoor		
Technical co Assumes a	nditions and measures good basic standard o	f occupatio	nal hygiene is implemented.	
Conditions a Wear chem (Effectivend	nd measures related to ically resistant gloves ( ess (of a measure): 90 %	) personal p (tested to El %)	rotection, hygiene and health eva N374) in combination with 'basic'	aluation employee training.
2.6 Contribu fuel sources	uting scenario contro s, limited exposure to	Iling work o unburned	er exposure for: PROC16: Usir I product to be expected	ng material as
Product char Concentra in Mixture/ Physical F	racteristics tion of the Substance /Article orm (at time of use)	: Covers : liquid	percentage substance in the pro	duct up to 2%.
Frequency an Exposure Remarks Frequency	nd duration of use duration v of use	: < 480 m : Inhalati : <= 240 c	in on, Dermal days/year	
Human facto Breathing	rs not influenced by ris volume	sk managen : 10 m3/c	lay	
Other operat Outdoor / I	ional conditions affecti Indoor	ng workers : Indoor	exposure	
Technical co Assumes a	nditions and measures good basic standard o	f occupatio	nal hygiene is implemented.	
Conditions a Wear chem supervisior	nd measures related to ically resistant gloves ( n controls. (Effectivenes	personal p (tested to El ss (of a mea	rotection, hygiene and health eva N374) in combination with intens Isure): 98 %)	aluation ive management
2.7 Contribu	uting scenario contro	lling work	er exposure for: PROC5: Mixin	g or blending in

# 2.7 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day

59 / 126

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Other operat	ional conditions affecti	ng workers	sexposure	
Outdoor /	Indoor	: Indoor		
Technical co Assumes a	nditions and measures good basic standard o	f occupatio	onal hygiene is implemented.	
2.8 Contribu substance o non-dedicat	uting scenario contro or preparation (charg ted facilities	lling work ing/ disch	er exposure for: PROC8a: Tra arging) from/ to vessels/ large	nsfer of containers at
Activity		: Materia	al transfers	
Concentra	tion of the Substance	: Covers	s percentage substance in the pro	oduct up to 0.5%.
Physical F	orm (at time of use)	: liquid		
Frequency a Exposure	nd duration of use duration	: < 480 r	nin	
Remarks Frequency	of use	: Inhalat : <= 240	ion, Dermal days/year	
Human facto Breathing	rs not influenced by ris volume	k managei : 10 m3/	nent day	
Other operat Outdoor / I	ional conditions affecti Indoor	ng workers : Indoor	s exposure	
Conditions a Wear suital	nd measures related to ble gloves tested to EN	personal   374. (Effect	protection, hygiene and health ev tiveness (of a measure): 80 %)	aluation
2.9 Contribu substance o dedicated fa	uting scenario contro or preparation (charg acilities	lling work ing/ disch	er exposure for: PROC8b: Tra arging) from/ to vessels/ large	Insfer of containers at
Activity		: Bulk tr	ansfers, Dedicated facility	
Concentra	tion of the Substance	: Covers	s percentage substance in the pro	oduct up to 0.5%.
Physical F	orm (at time of use)	: liquid		
Frequency and Exposure Remarks	nd duration of use duration	: < 480 r : Inhalat	nin ion. Dermal	

Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

Human factors not influenced by risk management

Remarks

Frequency of use

Breathing volume

: 10 m3/day

: Inhalation, Dermal

: <= 240 days/year

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

# 2.10 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Activity Dreduct characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	f occupational hygiene is implemented.
2.11 Contributing scenario contro fuel sources, limited exposure to	olling worker exposure for: PROC16: Using material as unburned product to be expected
Product characteristics	
Product characteristics Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers percentage substance in the product up to 0.5%. : liquid
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	<ul> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> </ul>
<ul> <li>Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)</li> <li>Frequency and duration of use Exposure duration Remarks Frequency of use</li> <li>Human factors not influenced by ris Breathing volume</li> </ul>	<ul> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> </ul>
<ul> <li>Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)</li> <li>Frequency and duration of use Exposure duration Remarks Frequency of use</li> <li>Human factors not influenced by ris Breathing volume</li> <li>Other operational conditions affectin Outdoor / Indoor</li> </ul>	<ul> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>
<ul> <li>Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)</li> <li>Frequency and duration of use Exposure duration Remarks Frequency of use</li> <li>Human factors not influenced by ris Breathing volume</li> <li>Other operational conditions affectin Outdoor / Indoor</li> <li>Technical conditions and measures Assumes a good basic standard of</li> </ul>	<ul> <li>: Covers percentage substance in the product up to 0.5%.</li> <li>: liquid</li> <li>: &lt;480 min</li> <li>: Inhalation, Dermal</li> <li>: &lt;= 240 days/year</li> <li>k management</li> <li>: 10 m3/day</li> <li>ng workers exposure</li> <li>: Indoor</li> </ul>

#### 3. Exposure estimation and reference to its source

Version 1 Revision Date 22.11.2013 Print Date 27.02.2014

GB / EN

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0014 mg/L	0.0075
			Fresh water sediment		0.722 mg/kg dry weight	0.0075
			Marine water		0.0001 mg/L	0.0037
			Marine sediment		0.072 mg/kg dry weight	0.0037
			Sewage treatment plant		0 mg/L	0
			Soil		0.114 mg/kg dry weight	0.006
			Grassland		0.0011 mg/kg dry weight	< 0.0001

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m3	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m3	0.002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC16	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.12 mg/m3	0.12

Version 1	Revision Date 2	2.11.2013 Print Date 27.0	)2.2014		GB / EN
			Long term dermal	0.0069 mg/kg bw/day	0.002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m3	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
			Short term inhalation	0.609 mg/m3	0.005
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC16	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.015 mg/m3	0.015
			Long term dermal	0.014 mg/kg bw/day	0.024

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

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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

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

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

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

#### 1. Short title of Exposure Scenario: Diesel and gasoline additive

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental Release Categories	: ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
Process categories	<ul> <li>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non- dedicated facilities</li> <li>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected</li> </ul>

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC10b: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)

Amount used	
Regional use tonnage (tonnes/vear):	: 1160 ton(s)/year
Fraction of Regional tonnage used locally:	: 0.05 %
Maximum daily site tonnage (kg/day):	: 1.59 kg/day
Environment factors not influenced b	by risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions a	ffecting environmental exposure
Number of emission days per year	: 365
Emission or Release Factor: Air	: 0.11 %
Emission or Release Factor: Water	: 0%
Emission or Release Factor: Soil	: 0%
Remarks	: No waste water is released to the environment
Technical conditions and measures	Organizational measures
Exposure time	: Continuous use/release
Compartment	· Fresh water Fresh water sediment Marine water Marine
Compartment	sediment, Soil, Grassland, Sewage treatment plant

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity Product characteristics	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	k management
Breathing volume	: 10 m3/day
Other operational conditions affectin	ng workers exposure
Outdoor / Indoor	: Indoor

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.3 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers percentage substance in the product up to 2%. : liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	= 240  days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management is (of a measure): 98 %)

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity Product characteristics	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 220 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affection	ng workers exposure
Outdoor / Indoor	: Indoor

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

## 2.5 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

Product characteristics Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 220 days/year
Human factors not influenced by risl	k management
Breathing volume	: 10 m3/day
Other operational conditions affectir	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.

### 3. Exposure estimation and reference to its source

Environment

Contributing Expo Scenario Asses	sure Specific sment conditions	Compartme nt	Value	Level of Exposure	RCR
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Version 1	Revision Date 22.11.2013	Print Date 27.02.2014		GB / EN
	Method			
ERC10b	EUSES	Fresh water	0.0014 mg/L	0.0075
		Fresh water sediment	0.722 mg/kg dry weight	0.0075
		Marine water	0.0001 mg/L	0.0037
		Marine sediment	0.072 mg/kg dry weight	0.0037
		Sewage treatment plant	0 mg/L	0
		Soil	0.114 mg/kg dry weight	0.006
		Grassland	0.0011 mg/kg dry weight	< 0.0001

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m3	0.609
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	1.2 mg/m3	0.004
PROC16	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.12 mg/m3	0.12
			Long term dermal	0.0069 mg/kg bw/day	0.002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m3	0.76
			Long term dermal	0.0137 mg/kg bw/day	0.024
			Short term inhalation	1.52 mg/m3	0.001
PROC16	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.015 mg/m3	0.015
			Long term dermal	0.014 mg/kg bw/day	0.024

ERC10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing) PROC16: Using material as fuel sources, limited exposure to unburned product to be expected PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

#### 1. Short title of Exposure Scenario: Wood protection formulations

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories Process categories	<ul> <li>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</li> <li>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)</li> <li>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</li> <li>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</li> <li>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</li> <li>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</li> </ul>
	containers (accubated minig me, including weighing)

# 2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Amount used	
Regional use tonnage (tonnes/vear):	: 604 ton(s)/year
Fraction of Regional tonnage used locally:	: 4.5 %
Maximum daily site tonnage (kg/day):	: 123 kg/day
Environment factors not influenced	by risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions a	iffecting environmental exposure
Number of emission days per year	: 220
Emission or Release Factor: Air	: 0.011 %
Emission or Release Factor: Water	: 2%
Emission or Release Factor: Soil	: 0%
Technical conditions and measures	/ Organizational measures
Exposure time	: Continuous use/release
Compartment	: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Grassland, Sewage treatment plant

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity Product characteristics	: Mixing operations (open systems)
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( (Effectiveness (of a measure): 90 %	personal protection, hygiene and health evaluation tested to EN374) in combination with 'basic' employee training. %)
2.3 Contributing scenario contro substance or preparation (chargi non-dedicated facilities	lling worker exposure for: PROC8a: Transfer of ing/ discharging) from/ to vessels/ large containers at
Activity	: Material transfers
Product characteristics Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	10. Th
	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: Iquid : < 480 min : Inhalation, Dermal : <= 240 days/year
Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	: IIquid : < 480 min : Inhalation, Dermal : <= 240 days/year k management : 10 m3/day
<ul> <li>Frequency and duration of use Exposure duration Remarks Frequency of use</li> <li>Human factors not influenced by ris Breathing volume</li> <li>Other operational conditions affectin Outdoor / Indoor</li> </ul>	: Ilquid : < 480 min : Inhalation, Dermal : <= 240 days/year k management : 10 m3/day ng workers exposure : Indoor

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Product characteristics	: Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risl	k management
Breathing volume	: 10 m3/day
Other operational conditions affectin	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.
Conditions and measures related to	neveral protection, burgions and backth surfluction

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

### 2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	<pre>c management</pre>
Breathing volume	: 10 m3/day
Other operational conditions affectin Outdoor / Indoor	g workers exposure : Indoor

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

Activity	: Mixing operations (open systems)
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor

**Technical conditions and measures** 

Assumes a good basic standard of occupational hygiene is implemented.

2.7 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity Product characteristics	: Material transfers	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.	
Physical Form (at time of use)	: liquid	
Frequency and duration of use		
Exposure duration	: < 480 min	
Remarks	: Inhalation, Dermal	
Frequency of use	: <= 240 days/year	
Human factors not influenced by risk management		
Breathing volume	: 10 m3/day	
Other operational conditions affectir Outdoor / Indoor	ng workers exposure : Indoor	
Version 1	Revision Date 22.11.2013	
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Print Date 27.02.2014

GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics       Covers percentage substance in the product up to 0.5%.         in Mixture/Article       Physical Form (at time of use)       : liquid         Frequency and duration of use       Exposure duration       : < 480 min         Remarks       : Inhalation, Dermal         Frequency of use       : < < 240 days/year         Human factors not influenced by risk management       Breauting volume       : 10 m3/day         Other operational conditions affecting workers exposure       Outdoor / Indoor       : Indoor         Technical conditions and measures       Assumes a good basic standard of occupational hygiene is implemented.         2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       Covers percentage substance in the product up to 0.5%. in Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       Exposure duration of use         Exposure duration in the substance       : lon 3/day         Physical Form (at time of use)       : liquid         Frequency and duration of use       : < 480 min         Exposure duration       : < < 240 days/year         Human factors	Activity	: Bulk transfers, Dedicated facility
In Mixture/Article Physical Form (at time of use) : liquid Frequency and duration of use Exposure duration i : < 480 min Remarks : Inhalation, Dermal Frequency of use : <= 240 days/year Human factors not influenced by risk management Breathing volume : 10 m3/day Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented. 2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Activity : Material transfers, Bulk transfers, Dedicated facility Product characteristics Concentration of the Substance : Covers percentage substance in the product up to 0.5%. in Mixture/Article Physical Form (at time of use) : liquid Frequency and duration of use Exposure duration = : <480 min Remarks : Inhalation, Dermal Frequency of use : : <= 240 days/year Human factors not influenced by risk management Breathing volume : 10 m3/day Other operational conditions affecting workers exposure Outdoor / Indoor : Inhalation, Dermal Frequency and duration of use Exposure duration = : 10 m3/day Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor	Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Frequency and duration of use       Exposure duration       : < 480 min	Physical Form (at time of use)	: liquid
Exposite duration       1       C voormal         Frequency of use       1       Inhalation, Dermal         Frequency of use       1       <	Frequency and duration of use	• < 180 min
Frequency of use       : <= 240 days/year	Remarks	: Inhalation. Dermal
Human factors not influenced by risk management Breathing volume : 10 m3/day Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented. 2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Activity : Material transfers, Bulk transfers, Dedicated facility Product characteristics Concentration of the Substance : Covers percentage substance in the product up to 0.5%. in Mixture/Article Physical Form (at time of use) : liquid Frequency and duration of use Exposure duration influenced by risk management Breathing volume : <10 m3/day Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor	Frequency of use	: <= 240 days/year
Breathing volume       : 10 m3/day         Other operational conditions affecting workers exposure Outdoor / Indoor       : Indoor         Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.         2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%. in Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       : < 480 min	Human factors not influenced by ris	k management
Other operational conditions affecting workers exposure Outdoor / Indoor       : Indoor         Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.         2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%. in Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       : 480 min         Exposure duration       : < 480 min	Breathing volume	: 10 m3/day
Outdoor / indoor       : indoor         Technical conditions and measures         Assumes a good basic standard of occupational hygiene is implemented.         2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%.         in Mixture/Article       Physical Form (at time of use)         Prequency and duration of use       : < 480 min	Other operational conditions affectin	ng workers exposure
Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.         2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%. in Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       : < 480 min Remarks         Exposure duration       : < 480 min Remarks         Frequency of use       : <= 240 days/year		: Indoor
2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       Concentration of the Substance : Covers percentage substance in the product up to 0.5%. in Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       Exposure duration         Exposure duration       : < 480 min	Technical conditions and measures Assumes a good basic standard of	f occupational hygiene is implemented.
2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%.         in Mixture/Article       : Liquid         Prequency and duration of use       : < 480 min		
Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%.         in Mixture/Article       Physical Form (at time of use)       : liquid         Frequency and duration of use       : exposure duration       : < 480 min	2.9 Contributing scenario control or preparation into small contain	lling worker exposure for: PROC9: Transfer of substance ers (dedicated filling line, including weighing)
Activity       : Material transfers, Bulk transfers, Dedicated facility         Product characteristics       : Covers percentage substance in the product up to 0.5%.         in Mixture/Article       : Iiquid         Prequency and duration of use       : Iaquid         Exposure duration       : < 480 min		
Product characteristics         Concentration of the Substance : Covers percentage substance in the product up to 0.5%.         in Mixture/Article         Physical Form (at time of use) : liquid         Frequency and duration of use         Exposure duration : < 480 min	Activity Product observatoriation	: Material transfers, Bulk transfers, Dedicated facility
In Mixture/Article         Physical Form (at time of use)       : liquid         Frequency and duration of use       Exposure duration         Exposure duration       : < 480 min	Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Frequency and duration of use         Exposure duration       : < 480 min	Physical Form (at time of use)	: liquid
Exposure duration       :       < 480 min	Frequency and duration of use	
Remarks       :       Inhalation, Dermal         Frequency of use       :       <= 240 days/year	Exposure duration	· < 480 min
Frequency of use       : <= 240 days/year		
Human factors not influenced by risk management Breathing volume       : 10 m3/day         Other operational conditions affecting workers exposure Outdoor / Indoor       : Indoor         Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.	Remarks	: Inhalation, Dermal
Breathing volume       : 10 m3/day         Other operational conditions affecting workers exposure Outdoor / Indoor       : Indoor         Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.	Remarks Frequency of use	: Inhalation, Dermal : <= 240 days/year
Other operational conditions affecting workers exposure         Outdoor / Indoor       : Indoor         Technical conditions and measures         Assumes a good basic standard of occupational hygiene is implemented.	Remarks Frequency of use Human factors not influenced by ris	: Inhalation, Dermal : <= 240 days/year k management
Outdoor / Indoor : Indoor Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.	Remarks Frequency of use Human factors not influenced by ris Breathing volume	: Inhalation, Dermal : <= 240 days/year k management : 10 m3/day
Technical conditions and measures Assumes a good basic standard of occupational hygiene is implemented.	Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affectin	<ul> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> </ul>
	Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affectin Outdoor / Indoor	<ul> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>
	Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affectin Outdoor / Indoor Technical conditions and measures Assumes a good basic standard of	<ul> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>

#### 3. Exposure estimation and reference to its source

 Version 1
 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.078 mg/L	0.412
			Fresh water sediment		39.5 mg/kg dry weight	0.412
			Marine water		0.0078 mg/L	0.206
			Marine sediment		3.95 mg/kg dry weight	0.206
			Sewage treatment plant		0.775 mg/L	0.182
			Soil		0.114 mg/kg dry weight	0.006
			Grassland		0.114 mg/kg dry weight	0.006

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.0274 mg/kg bw/day	0.0481
			Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/m3	0.1218
			Long term dermal	0.0274 mg/kg bw/day	0.048
			Short term inhalation	0.243 mg/m3	0.002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC9	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.055 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance	Long term	0.149 mg/m3	0.149

Version 1	Revision Date 2	2.11.2013 Print Date 27.0		)2.2014		GB / EN	
		in the produ	ct up to 0.5%.	inhalation			
				Long term dermal	0.0686 mg/kg bw/day	0.12	
PROC8a	ECETOC TRA	Covers percer in the produ	ntage substance oct up to 0.5%.	Long term inhalation	0.304 mg/m3	0.304	
				Long term dermal	0.0686 mg/kg bw/day	0.12	
				Short term inhalation	0.609 mg/m3	0.005	
PROC8b	ECETOC TRA	Covers percer in the produ	ntage substance oct up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149	
				Long term dermal	0.0686 mg/kg bw/day	0.12	
PROC9	ECETOC TRA	Covers percer in the produ	ntage substance oct up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149	
				Long term dermal	0.0686 mg/kg bw/day	0.12	

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

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

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

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

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

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1 Revision Date 22.11.2013 Print Date 27

1. Short title of Exposure Scenario: Industrial use of Coatings and Adhesives

Print Date 27.02.2014

GB / EN

Main User Groups : SU 3: Industrial uses preparations at indus	: Uses of substances as such or in strial sites
Environmental Release · FRC4_ERC5: Industr	ial use of processing aids in
Categories processes and produ	acts, not becoming part of articles,
Process categories · PROC5: Mixing or blo	anding in batch processes for
formulation of prepar	rations and articles (multistage and/
or significant contact	()
PROC6: Calendering	operations
PROC7: Industrial sp	oraying
PROC8a: Transfer of	substance or preparation (charging/
discharging) from/ to dedicated facilities	vessels/ large containers at non-
PROC8b: Transfer of	substance or preparation (charging/
discharging) from/ to	vessels/ large containers at
PROC9: Transfer of s	substance or preparation into small
containers (dedicated	d filling line, including weighing)
PROC10: Roller appli	ication or brushing
PROC13: Treatment of	of articles by dipping and pouring
PROC14: Production	of preparations or articles by
tabletting, compressi	ion, extrusion, pelletisation

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC5: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix

Amount used	
Regional use tonnage (tonnes/vear):	: 2560 ton(s)/year
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 7014 kg/day
Environment factors not influenced Dilution Factor (River)	by risk management : 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions a	affecting environmental exposure
Number of emission days per year	: 365
Emission or Release Factor: Air	: 0%
Emission or Release Factor: Water	: 1%
Emission or Release Factor: Soil	: 0.5 %
Provide, with either onsite or	: > 37.4 %

Version 1	Revision Date 22.11.2	201	3 Print Date 27.02.2014	GB / EN
domestic wast a total wastewa efficiency of (%	ewater treatment, ater removal %)			
Technical conditi Exposure time Compartment	ions and measures	/ C : :	Organizational measures Continuous use/release Fresh water, Fresh water sediment, Marine v sediment, Soil, Grassland, Sewage treatmen	vater, Marine It plant
2.2 Contributing batch processe significant cont	g scenario contro s for formulation act)	llir of	ig worker exposure for: PROC5: Mixing o preparations and articles (multistage and	r blending in ៅ/ or
Activity		:	Mixing operations (open systems)	
Product character Concentration in Mixture/Artic Physical Form	eristics of the Substance cle (at time of use)	:	Covers the percentage of the substance in t to 25 %. liquid	he product up
Frequency and d Exposure dura Remarks Frequency of u	uration of use tion Ise	:	15 - 60 min Inhalation, Dermal <= 240 days/year	
Human factors no Breathing volu	ot influenced by ris me	kr :	nanagement 10 m3/day	
Other operationa Outdoor / Indo	l conditions affectii or	ng :	workers exposure Indoor	
Technical conditi Provide extract %)	ions and measures ion ventilation at po	oin	ts where emissions occur. (Effectiveness (of	a measure): 90
Conditions and n Wear chemicall supervision co	neasures related to y resistant gloves ( ntrols. (Effectivenes	pe tes ss	ersonal protection, hygiene and health evalua sted to EN374) in combination with intensive i (of a measure): 98 %)	tion management
2.3 Contributing substance or p non-dedicated f	g scenario contro reparation (chargi facilities	llir inç	ng worker exposure for: PROC8a: Transfe / discharging) from/ to vessels/ large cor	er of Intainers at
Activity		:	Material transfers	
Product character Concentration in Mixture/Artic Physical Form	eristics of the Substance cle (at time of use)	:	Covers the percentage of the substance in t to 25 %. liquid	he product up
Frequency and d Exposure dura Remarks	uration of use tion	:	< 480 min Inhalation, Dermal	

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN
Frequency	of use : <	= 240 days/year	
Human factor Breathing v	rs not influenced by risk ma volume : 1	nagement 0 m3/day	
Other operati Outdoor / I	onal conditions affecting w ndoor : li	orkers exposure ndoor	
Technical cor Provide ext %)	nditions and measures raction ventilation at points	where emissions occur. (Effectiveness	(of a measure): 90
Conditions ar Wear chemi supervision Wear a resp 95 %)	nd measures related to pers cally resistant gloves (teste controls. (Effectiveness (o irator conforming to EN140	sonal protection, hygiene and health eva ed to EN374) in combination with intensi f a measure): 98 %) with Type A filter or better. (Effectivene	Iluation ve management ess (of a measure):

2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Broduct obstactoristics	: Bulk transfers, Dedicated facility
Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Covers the percentage of the substance in the product up to 25 %.</li> <li>liquid</li> </ul>
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 97
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.5 Contributing sconario control	lling worker expecting for: PPOCO, Transfer of substance
or preparation into small contain	ers (dedicated filling line, including weighing)

cated filling line, including weighing)

Activity
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: Material transfers, Bulk transfers, Dedicated facility

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Product charac Concentratio in Mixture/Ar Physical For	teristics n of the Substance ticle m (at time of use)	: Covers to 25 % : liquid	s the percentage of the substance %.	in the product up
Frequency and Exposure du Remarks Frequency of	duration of use ration f use	: < 480 r : Inhalat : <= 240	nin ion, Dermal days/year	
Human factors Breathing vo	not influenced by ris lume	k manager : 10 m3/	ment day	
Other operation Outdoor / Ind	nal conditions affections	ng workers : Indoor	s exposure	
Technical cond Provide extra %)	itions and measures ction ventilation at po	oints where	e emissions occur. (Effectiveness	s (of a measure): 90
Conditions and Wear chemica supervision c Wear a respira 90 %)	measures related to ally resistant gloves ( ontrols. (Effectivenes ator conforming to El	personal   tested to E ss (of a me N140 with <sup>-</sup>	protection, hygiene and health ev N374) in combination with intens asure): 98 %) Type A filter or better. (Effectiven	aluation sive management ess (of a measure):
2.6 Contributi batch process significant co	ng scenario contro ses for formulation ntact)	lling work of prepar	er exposure for: PROC5: Mixinations and articles (multistage	ng or blending in and/ or
Activity Product charac Concentratio in Mixture/Ar Physical For	teristics n of the Substance ticle m (at time of use)	: Mixing : Covers : liquid	operations (open systems) s percentage substance in the pro	oduct up to 15%.
Frequency and Exposure du Remarks Frequency of	duration of use ration f use	: < 480 r : Inhalat : <= 225	nin ion, Dermal days/year	
Human factors Breathing vo	not influenced by ris lume	k manager : 10 m3/	nent day	
Other operation Outdoor / Ind	nal conditions affectii loor	ng workers : Indoor	s exposure	
Technical cond Provide extra %)	itions and measures ction ventilation at po	oints where	e emissions occur. (Effectiveness	s (of a measure): 90
Conditions and	measures related to	personal	protection, hygiene and health ev	aluation

Wear chemically resistant gloves (tested to EN374) in combination with intensive management

Version	1
1001	

Revision Date 22.11.2013 Print Date 27.02.2014

GB / EN

supervision controls. (Effectiveness (of a measure): 98 %)

#### 2.7 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Activity	: Calendering (including Banburys)
Product characteristics	• Covers percentage substance in the product up to 15%
in Mixture/Article	. Obvers percentage substance in the product up to 10%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	100 min
Exposure duration	: < 480 min : Inhalation Dormal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management is (of a measure): 98 %)
2.8 Contributing scenario control	lling worker exposure for: PROC7: Industrial spraying
Product characteristics	
Concentration of the Substance	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures	

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

2.9 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: 15 - 60 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	oints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation (tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.10 Contributing scenario contro substance or preparation (charge dedicated facilities	olling worker exposure for: PROC8b: Transfer of ing/ discharging) from/ to vessels/ large containers at
Activity	: Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid

Human factors not influenced by risk management

Breathing volume	: 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at pe %)	oints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves supervision controls. (Effectivenes	personal protection, hygiene and health evaluation (tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.11 Contributing scenario contr substance or preparation into sn	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing)
Activity	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	· < 180 min

Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris	: < 480 min : Inhalation, Dermal : <= 225 days/year sk management
Breathing volume	: 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at pe %)	oints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves supervision controls. (Effectivenes	personal protection, hygiene and health evaluation (tested to EN374) in combination with intensive management ss (of a measure): 98 %)
2.12 Contributing scenario contr or brushing	olling worker exposure for: PROC10: Roller application
Activity	· Roller spreader flow application
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: 60 - 240 min
	82 / 126

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Version 1 Revision D	ate 22.11.2013	Print Date 27.02.2014	GB / EN
Remarks Frequency of use	: Inhalati : <= 240	on, Dermal days/year	
Human factors not influence Breathing volume	ced by risk managen : 10 m3/c	nent lay	
Other operational conditio Outdoor / Indoor	ns affecting workers : Indoor	exposure	
Technical conditions and r Provide extraction ventile %)	neasures ation at points where	emissions occur. (Effectivene	ess (of a measure): 90
Conditions and measures Wear chemically resistan supervision controls. (Ef	related to personal p t gloves (tested to E fectiveness (of a mea	rotection, hygiene and health ( N374) in combination with inte asure): 98 %)	evaluation nsive management
2.13 Contributing scena articles by dipping and p	rio controlling wor pouring	ker exposure for: PROC13:	Treatment of
Activity	: Treatmo by dipp	ent by dipping and pouring, Pr ing and pouring	oduction of articles
Product characteristics Concentration of the Sul in Mixture/Article Physical Form (at time o	bstance : Covers f use) : liquid	percentage substance in the p	product up to 15%.
Frequency and duration of Exposure duration Remarks Frequency of use	use : 60 - 240 : Inhalati : <= 240	) min on, Dermal days/year	
Human factors not influence Breathing volume	ced by risk managen : 10 m3/c	nent lay	
Other operational conditio Outdoor / Indoor	ns affecting workers : Indoor	exposure	
Technical conditions and r Provide extraction ventile %)	neasures ation at points where	emissions occur. (Effectivene	ess (of a measure): 90
Conditions and measures Wear chemically resistan supervision controls. (Ef	related to personal p t gloves (tested to E fectiveness (of a mea	rotection, hygiene and health ( N374) in combination with inte asure): 98 %)	evaluation nsive management
2.14 Contributing scena preparations or articles	rio controlling wor by tabletting, com	ker exposure for: PROC14:   pression, extrusion, pelletis	Production of ation

Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 15%. in Mixture/Article

Version 1	Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
Physical Form	(at time of use)	: liquid		
Frequency and du Exposure durat Remarks Frequency of u	uration of use tion se	: < 480 min : Inhalatior : <= 240 da	ı, Dermal ys/year	
Human factors no Breathing volu	ot influenced by ris me	k manageme : 10 m3/day	nt /	
Other operational Outdoor / Indoo	conditions affectir	ng workers ex : Indoor	cposure	
Technical condition Provide extraction %)	ons and measures on ventilation at po	oints where e	missions occur. (Effective	eness (of a measure): 90
Conditions and m Wear chemically supervision con	easures related to / resistant gloves (t trols. (Effectivenes	personal pro tested to EN3 is (of a meas	tection, hygiene and hea 74) in combination with i ure): 98 %)	th evaluation ntensive management
2.15 Contributin batch processes significant conta	g scenario contro s for formulation act)	olling worke of preparation	r exposure for: PROC5 ons and articles (multis	: Mixing or blending in अage and/ or
Activity Product character Concentration in Mixture/Artic Physical Form	ristics of the Substance le (at time of use)	: Mixing op : Covers po : liquid	erations (open systems) ercentage substance in th	ne product up to 2%.
Frequency and du Exposure durat Remarks Frequency of u	uration of use tion se	: < 480 min : Inhalatior : <= 225 da	ı, Dermal ys/year	
Human factors no Breathing volu	ot influenced by ris me	k manageme : 10 m3/day	nt /	
Other operational Outdoor / Indoo	conditions affectir	ng workers ex : Indoor	kposure	
Technical condition Assumes a good	ons and measures d basic standard of	occupationa	I hygiene is implemented	I.
Conditions and m Wear chemically (Effectiveness (	easures related to / resistant gloves (t of a measure): 90 %	personal pro tested to EN3 6)	tection, hygiene and hea 74) in combination with '	th evaluation basic' employee training.
2.16 Contributin	g scenario contro	olling worke	r exposure for: PROC7	: Industrial spraying

#### Product characteristics

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Concentration in Mixture/A Physical For	on of the Substance rticle rm (at time of use)	:	Covers percentage substance in the product	up to 2%.
Frequency and Exposure du Remarks Frequency c	d duration of use uration of use	:	< 480 min Inhalation, Dermal <= 225 days/year	
Human factors Breathing vo	s not influenced by ris plume	k m :	nanagement 10 m3/day	
Other operatio Outdoor / In	nal conditions affecti door	ng :	workers exposure Indoor	
Technical cone Provide extra %)	ditions and measures action ventilation at po	oint	s where emissions occur. (Effectiveness (of a	measure): 90
Conditions and Wear chemic (Effectivenes	d measures related to ally resistant gloves ( s (of a measure): 90 %	pe tes ⁄⁄)	rsonal protection, hygiene and health evaluation ted to EN374) in combination with 'basic' empl	on loyee training.
2.17 Contribu substance or non-dedicate	iting scenario contr preparation (charg d facilities	olli ing	ng worker exposure for: PROC8a: Transfe / discharging) from/ to vessels/ large cont	r of ainers at
Activity		:	Material transfers	
Product chara Concentration in Mixture/A	cteristics on of the Substance rticle	:	Covers percentage substance in the product	up to 2%.
Physical For	rm (at time of use)	:	liquid	
Frequency and Exposure du Remarks Frequency o	d duration of use uration of use	:	< 480 min Inhalation, Dermal <= 225 days/year	
Human factors Breathing ve	not influenced by ris plume	km :	nanagement 10 m3/day	
Other operatio Outdoor / In	nal conditions affecti door	ng :	workers exposure Indoor	
Technical cone Provide extra %)	ditions and measures action ventilation at po	oint	s where emissions occur. (Effectiveness (of a	measure): 90
Conditions and Wear chemic (Effectivenes	d measures related to ally resistant gloves ( s (of a measure): 90 %	pe tes ⁄⁄)	rsonal protection, hygiene and health evaluation ted to EN374) in combination with 'basic' emp	on loyee training.

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

2.18 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Innalation, Dermai
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	sk management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves (Effectiveness (of a measure): 90 9	personal protection, hygiene and health evaluation (tested to EN374) in combination with 'basic' employee training. %)
2.19 Contributing scenario contr	olling worker exposure for: PROC9: Transfer of
substance or preparation into sr	nall containers (dedicated filling line, including weighing)
Activity	: Bulk transfers. Dedicated facility
Product characteristics	
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
in Mixture/Article	
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	sk management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures	
Assumes a good basic standard o	f occupational hygiene is implemented.
Conditions and measures related to	personal protection, hygiene and health evaluation
Wear chemically resistant gloves	

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

## 2.20 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity	: Roller, spreader, flow application
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90
Conditions and measures related to Wear chemically resistant gloves ( (Effectiveness (of a measure): 90 %	personal protection, hygiene and health evaluation tested to EN374) in combination with 'basic' employee training. %)
2.21 Contributing scenario contr articles by dipping and pouring	olling worker exposure for: PROC13: Treatment of
Activity	: Treatment by dipping and pouring, Production of articles by dipping and pouring
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers percentage substance in the product up to 2%.
Frequency and duration of use Exposure duration Remarks	: < 480 min
Frequency of use	: <= 240 days/year
Frequency of use Human factors not influenced by ris Breathing volume	k management : 10 m3/day

#### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90

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Revision Date 22.11.2013

Print Date 27.02.2014

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Version 1

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.22 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers percentage substance in the product up to 2%. : liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
2.23 Contributing scenario contributing scenario contributing significant contact)	olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or
2.23 Contributing scenario contributing scenario contributing scenario contribution significant contact) Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or</li> <li>Mixing operations (open systems)</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> </ul>
2.23 Contributing scenario contributing scenario contributing scenario contribution significant contact) Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	<ul> <li>olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or</li> <li>Mixing operations (open systems)</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 225 days/year</li> </ul>
2.23 Contributing scenario contribution significant contact) Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or : Mixing operations (open systems) : Covers percentage substance in the product up to 0.5%. : liquid : <480 min : Inhalation, Dermal : <= 225 days/year k management : 10 m3/day
2.23 Contributing scenario contributch processes for formulation significant contact) Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affection Outdoor / Indoor	olling worker exposure for: PROC5: Mixing or blending in of preparations and articles (multistage and/ or : Mixing operations (open systems) : Covers percentage substance in the product up to 0.5%. : liquid : <480 min : Inhalation, Dermal : <= 225 days/year k management : 10 m3/day ng workers exposure : Indoor

Version 1	Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
2.24 Contril	buting scenario contro	olling worke	r exposure for: PROC7: In	dustrial spraying
Product cha	racteristics			
Concentra	ition of the Substance /Article	: Covers p	ercentage substance in the p	roduct up to 0.5%.
Physical F	form (at time of use)	: liquid		
Frequency a	nd duration of use			
Exposure	duration	: < 480 mir	1	
Remarks		: Inhalation	n, Dermal	
Frequency	/ of use	: <= 225 da	ys/year	
Human facto	ors not influenced by ris	k manageme	nt	
Breathing	volume	: 10 m3/da	y	
Other operat	tional conditions affectir	ng workers e	xposure	
Outdoor /	Indoor	: Indoor		
Technical co	onditions and measures			
Provide ext %)	traction ventilation at po	ints where e	missions occur. (Effectivene	ss (of a measure): 90
2.25 Contril substance	buting scenario contro or preparation (chargi	olling worke ng/ dischar	r exposure for: PROC8a: T ging) from/ to vessels/ larg	Fransfer of ge containers at
non-dedica	ted facilities			

Activity Product characteristics Concentration of the Substance in Mixture/Article	<ul> <li>Material transfers</li> <li>Covers percentage substance in the product up to 0.5%.</li> </ul>
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks Frequency of use	: < 480 min : Inhalation, Dermal : <= 225 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	f occupational hygiene is implemented.
Conditions and measures related to Wear suitable gloves tested to EN3	personal protection, hygiene and health evaluation 374. (Effectiveness (of a measure): 80 %)
2 26 Contributing scopario contri	alling worker exposure for: PPOC9b: Transfer of

2.26 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Other operational conditions affecting workers exposure

Outdoor / Indoor

**Technical conditions and measures** 

Version 1 Revision Date 22.11.2	2013 Print Date 27.02.2014 GB / EN
Activity	: Material transfers, Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	$\sim 180$ min
Pomorko	. < 400 mm
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
2.27 Contributing scenario contributing scenario contributing substance or preparation into sr	olling worker exposure for: PROC9: Transfer of nall containers (dedicated filling line, including weighing)
Activity	: Bulk transfers, Dedicated facility
Product characteristics	
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Francisco en la deservición a fase a	
Frequency and duration of use	···· ·
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 225 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/dav

2.28 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing				
Activity	: Roller, spreader, flow application			
Product characteristics				
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.			
Physical Form (at time of use)	: liquid			

: Indoor

Assumes a good basic standard of occupational hygiene is implemented.

Version 1	Revision Date 22.11.	2013	Print Date 27.02.2014	GB / EN
Frequency a Exposure Remarks Frequency	nd duration of use duration v of use	: < 480 : Inhala : <= 240	min ation, Dermal 0 days/year	
Human facto Breathing	rs not influenced by ris volume	sk manage : 10 m3	ement B/day	
Other operat Outdoor /	ional conditions affecti Indoor	ng worker : Indoo	rs exposure r	
Technical co Assumes a	nditions and measures good basic standard o	f occupati	ional hygiene is implemented.	
2.29 Contril articles by (	outing scenario contr dipping and pouring	olling wo	orker exposure for: PROC13: T	reatment of
Activity		: Treatr	ment by dipping and pouring, Pro	duction of articles
Product char Concentra in Mixture	racteristics tion of the Substance /Article	: Cover	rs percentage substance in the pr	oduct up to 0.5%.
Physical F	orm (at time of use)	: liquid		
Frequency a Exposure Remarks Frequency	nd duration of use duration v of use	: < 480 : Inhala : <= 240	min ation, Dermal 0 days/year	
Human facto Breathing	rs not influenced by ris volume	sk manage : 10 m3	ement B/day	
Other operat Outdoor /	ional conditions affecti Indoor	ng worker : Indoo	rs exposure r	
Technical co Assumes a	nditions and measures good basic standard o	f occupati	ional hygiene is implemented.	
2.30 Contril preparation	outing scenario contr is or articles by table	olling wo tting, con	orker exposure for: PROC14: P npression, extrusion, pelletisa	roduction of tion
Product cha Concentra in Mixture Physical F	racteristics tion of the Substance /Article form (at time of use)	: Cover : liquid	rs percentage substance in the pr	oduct up to 0.5%.
Frequency	nd duration of uso			

Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014

Human factors not influenced by risk management Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

#### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.0014 mg/L	0.0075
			Fresh water		0.722 mg/kg	0.0075
			sediment		dry weight	
			Marine		0.0001 mg/L	0.0037
			water			
			Marine		0.072 mg/kg	0.0037
			sediment		dry weight	
			Sewage		0 mg/L	0
			treatment			
			plant			
			Soil		0.16 mg/kg	0.0084
					dry weight	
			Grassland		0.204 mg/kg dry weight	0.011

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m3	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m3	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 - 0.914 mg/m3	0.0001 - 0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up	Long term inhalation	0.548 mg/m3	0.548

Version 1	Revision Date 2	2.11.2013 Print Date 27.0	02.2014		GB / EN
	I	to 25 %	I	I	I
			Long term dermal	0.034 mg/kg bw/day	0.0602
			Short term inhalation	1.098 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.182 mg/m3	0.182
			Long term dermal	0.034 mg/kg bw/day	0.06
			Short term inhalation	0.731 mg/m3	0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.041 mg/kg bw/day	0.072
			Short term inhalation	0.914 mg/m3	0.0002
PROC6	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.144
			Short term inhalation	0.914 mg/m3	0.0002
PROC7	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term	0.457 mg/m3	0.457
			Long term dermal	0.129 mg/kg bw/day	0.2256
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.548 mg/m3	0.548
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.137 mg/m3	0.137
			Long term dermal	0.137 mg/kg bw/day	0.036
			Short term inhalation	0.274 mg/m3	< 0.0001
PROC9	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.02 mg/kg bw/day	0.036
			Short term inhalation	0.913 mg/m3	0.0002
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.536 mg/m3	0.536
			Long term dermal	0.008 mg/kg bw/dav	0.014
PROC13	ECETOC TRA	Covers percentage substance	Long term	0.548 ma/ka	0.5484

#### GB / EN Version 1 Revision Date 22.11.2013 Print Date 27.02.2014 bw/day in the product up to 15%. inhalation 0.0411 0.0722 Long term dermal mg/m3 Short term 1.097 mg/m3 0.0002 inhalation PROC14 ECETOC TRA **Covers percentage substance** Long term 0.457 mg/kg 0.457 in the product up to 15%. inhalation bw/day Long term 0.0102 0.018 dermal mg/m3 Short term 0.914 mg/m3 0.0002 inhalation PROC5 ECETOC TRA Covers percentage substance Long term 0.61 mg/m3 0.6093 in the product up to 2%. inhalation Long term 0.05 mg/kg 0.0962 dermal bw/day 1.22 mg/m3 Short term 0.0002 inhalation PROC7 ECETOC TRA Covers percentage substance Long term 0.61 mg/m3 0.6093 in the product up to 2%. inhalation 0.09 mg/kg 0.1504 Long term dermal bw/day Short term 1.22 mg/m3 0.0002 inhalation ECETOC TRA PROC8a Covers percentage substance Long term 0.1218 0.1218 in the product up to 2%. inhalation mg/m3 0.0274 0.048 Long term dermal mg/kg bw/day Short term 0.243 mg/m3 < 0.0001 inhalation PROC8b ECETOC TRA Covers percentage substance Long term 0.61 mg/m3 0.6093 in the product up to 2%. inhalation Long term 0.055 mg/kg 0.0962 dermal bw/day Short term 1.22 mg/m3 0.0002 inhalation PROC9 ECETOC TRA **Covers percentage substance** Long term 0.61 mg/m3 0.6093 in the product up to 2%. inhalation Long term 0.055 mg/kg 0.0962 dermal bw/day Short term 1.22 mg/m3 0.0002 inhalation PROC10 ECETOC TRA Covers percentage substance Long term 0.119 mg/m3 0.119 in the product up to 2%. inhalation Long term 0.054 mg/kg 0.096 dermal bw/day PROC13 ECETOC TRA 0.121 mg/m3 0.121 Covers percentage substance Long term in the product up to 2%. inhalation Long term 0.054 mg/kg 0.054 dermal bw/day ECETOC TRA PROC14 Covers percentage substance Long term 0.609 mg/m3 0.609 in the product up to 2%. inhalation 0.068 mg/kg Long term 0.12 dermal bw/day

Version 1	Revision Date 22	2.11.2013 Print Date 27.0	2.2014		GB / EN
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.686 mg/kg bw/day	0.12
PROC7	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m3	0.152
			Long term dermal	0.214 mg/kg bw/day	0.376
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.304 mg/m3	0.304
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.149 mg/m3	0.149
			Long term dermal	0.0686 mg/kg bw/day	0.12
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.298 mg/m3	0.298
			Long term dermal	0.137 mg/kg bw/day	0.24
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.305 mg/m3	0.305
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC14	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.152 mg/m3	0.152
			Long term dermal	0.017 mg/kg bw/day	0.03

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

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

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

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

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

PROC6: Calendering operations

PROC7: Industrial spraying

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

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

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

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1

Revision Date 22.11.2013

1. Short title of Exposure So	cenario: Professional use of coatings & adhesives
Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental Release Categories	: ERC8a, ERC8c, ERC8d, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Process categories	<ul> <li>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)</li> <li>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non- dedicated facilities</li> <li>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</li> </ul>
	PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles

Print Date 27.02.2014

GB / EN

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8c, ERC8d, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix outdoor use resulting in inclusion into or onto a matrix.

PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles

Amount used Maximum daily site tonnage (kg/day):	: 14 kg/day
Environment factors not influenced	l by risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions	affecting environmental exposure
Number of emission days per year	: 365
Emission or Release Factor: Air	: 0%
Emission or Release Factor: Water	: 1%

Version 1 Revision Date 22.11	.2013	Print Date 27.02.2014	GB / EN
Emission or Release Factor: Soi Provide, with either onsite or domestic wastewater treatment, a total wastewater removal efficiency of (%)	l : 0.5 % : > 37.4 %		
Technical conditions and measure Exposure time Compartment	s / Organizatio : Continuo : Fresh wa sediment	onal measures ous use/release ter, Fresh water sediment, Ma t, Soil, Grassland, Sewage tre	arine water, Marine atment plant
2.2 Contributing scenario contribatch processes for formulation significant contact)	olling worker n of preparat	exposure for: PROC5: Mix ons and articles (multistag	ting or blending in Je and/ or
Activity	: Mixing o	perations (open systems)	
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers the to 25 %. : liquid	ne percentage of the substand	ce in the product up
Frequency and duration of use Exposure duration Remarks Frequency of use	: 15 - 60 m : Inhalatio : <= 240 da	in n, Dermal ays/year	
Human factors not influenced by ri Breathing volume	sk manageme : 10 m3/da	nt y	
Other operational conditions affect Outdoor / Indoor	ting workers e : Indoor	xposure	
Conditions and measures related t Wear chemically resistant gloves supervision controls. (Effectivene Wear a respirator conforming to l 95 %)	o personal pro (tested to EN ess (of a meas EN140 with Ty	otection, hygiene and health e 374) in combination with inter ure): 98 %) pe A filter or better. (Effective	evaluation nsive management eness (of a measure):
2.3 Contributing scenario contr substance or preparation (charge non-dedicated facilities	olling worker ging/ dischar	exposure for: PROC8a: Tr ging) from/ to vessels/ larg	ansfer of Je containers at
Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Material t : Covers tl to 25 %. : liquid	ransfers ne percentage of the substand	ce in the product up
Frequency and duration of use Exposure duration Remarks	: < 15 min : Inhalatio	n, Dermal	

Version 1 Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
Frequency of use	: <= 240 da	ys/year	
Human factors not influenced by ris Breathing volume	k manageme : 10 m3/da	nt Y	
Other operational conditions affectin Outdoor / Indoor	ng workers e : Indoor	kposure	
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes Wear a respirator conforming to El 95 %)	personal pro tested to EN3 is (of a meas N140 with Ty	etection, hygiene and health eva 874) in combination with intensi ure): 98 %) De A filter or better. (Effectivene	Iluation ve management ess (of a measure):
2.4 Contributing scenario contro substance or preparation (chargi dedicated facilities	lling worker ng/ dischar	exposure for: PROC8b: Trar ging) from/ to vessels/ large	nsfer of containers at
Activity	: Bulk tran	sfers, Dedicated facility	
Product characteristics	•		
Concentration of the Substance	: Covers th	e percentage of the substance	in the product up
Physical Form (at time of use)	: liquid		
	•		
Frequency and duration of use			
Exposure duration Remarks	: < 60 min	Dermal	
Frequency of use	: <= 240 da	lys/year	
Human factors not influenced by ris Breathing volume	k manageme	nt	
Breating volume	. 10 110/00	,	
Other operational conditions affectin	ng workers e	kposure	
Outdoor / Indoor	: Indoor		
Technical conditions and measures Provide extraction ventilation at po %)	oints where e	missions occur. (Effectiveness	(of a measure): 80
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal pro tested to EN3 ss (of a meas	tection, hygiene and health eva 874) in combination with intensi ure): 98 %)	Iluation ve management
2.5 Contributing scenario control batch processes for formulation significant contact)	lling worker of preparati	exposure for: PROC5: Mixin ons and articles (multistage	g or blending in and/ or
Activity	: Mixing or	perations (open systems)	
Product characteristics			
Concentration of the Substance	: Covers p	ercentage substance in the pro	duct up to 15%.
Physical Form (at time of use)	: liquid		

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Frequency and Exposure du Remarks Frequency o	l duration of use uration of use	: 15 - 60 r : Inhalatio : <= 240 c	nin on, Dermal lays/year	
Human factors Breathing vo	not influenced by ris	k managem : 10 m3/d	ent ay	
Other operatio Outdoor / Inc	nal conditions affecti door	ng workers : Indoor	exposure	
Technical cond Provide extra %)	ditions and measures action ventilation at po	oints where	emissions occur. (Effective	ness (of a measure): 80
Conditions and Wear chemic supervision o	d measures related to ally resistant gloves ( controls. (Effectivenes	personal p (tested to El ss (of a mea	otection, hygiene and healt I374) in combination with ir sure): 98 %)	h evaluation Itensive management
2.6 Contribut substance or non-dedicate	ing scenario contro preparation (charg d facilities	lling worke ing/ discha	er exposure for: PROC8a: rging) from/ to vessels/ la	Transfer of arge containers at
Activity Product charae Concentratio	cteristics on of the Substance	: Material : Covers	transfers percentage substance in th	e product up to 15%.

Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: 15 - 60 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes Wear a respirator conforming to E 90 %)	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management ss (of a measure): 98 %) N140 with Type A filter or better. (Effectiveness (of a measure):

2.7 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity	: Bulk transfers, Dedicated facility	

100 / 126

Version 1	Revision Date 22.11.2	013	Print Date 27.02.2014	GB / EN
Product characte Concentration in Mixture/Artio Physical Form	eristics of the Substance cle (at time of use)	:	Covers percentage substance in the product up to liquid	15%.
Frequency and d Exposure dura Remarks Frequency of u	uration of use tion ıse	:	15 - 60 min Inhalation, Dermal <= 240 days/year	
Human factors no Breathing volu	ot influenced by ris me	kn :	nanagement 10 m3/day	
Other operationa Outdoor / Indo	l conditions affectir or	ng :	workers exposure Indoor	
Technical conditi Provide extract %)	ions and measures ion ventilation at po	oint	s where emissions occur. (Effectiveness (of a meas	sure): 80
Conditions and n Wear chemicall supervision cor	neasures related to y resistant gloves ( htrols. (Effectivenes	pe tes ss (	rsonal protection, hygiene and health evaluation ted to EN374) in combination with intensive manag of a measure): 98 %)	ement
2.8 Contributing brushing	g scenario contro	llin	g worker exposure for: PROC10: Roller applica	ition or
Activity		:	Roller, spreader, flow application	
Product character Concentration in Mixture/Artice Physical Form	eristics of the Substance cle (at time of use)	:	Covers percentage substance in the product up to liquid	15%.
Frequency and d Exposure dura Remarks Frequency of u	uration of use tion use	:	15 - 60 min Inhalation, Dermal <= 240 days/year	
Human factors no Breathing volu	ot influenced by ris me	kn :	nanagement 10 m3/day	
Other operationa Outdoor / Indo	l conditions affectir or	ng :	workers exposure Indoor	
Technical conditi Assumes a goo	ions and measures d basic standard of	foc	cupational hygiene is implemented.	
Conditions and n Wear chemicall supervision cor Wear a respirate 95 %)	neasures related to y resistant gloves ( ntrols. (Effectivenes or conforming to El	pe tes ss ( N14	rsonal protection, hygiene and health evaluation ted to EN374) in combination with intensive manag of a measure): 98 %) 0 with Type A filter or better. (Effectiveness (of a m	ement easure):

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

GB / EN

## 2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Activity Product characteristics	: Spraying, Manual
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 10%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: 15 - 60 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risl	k management
Breathing volume	: 10 m3/day
Other operational conditions affectir	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Provide extraction ventilation at po %)	ints where emissions occur. (Effectiveness (of a measure): 80
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes	personal protection, hygiene and health evaluation tested to EN374) in combination with intensive management is (of a measure): 98 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

## 2.10 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Activity :	Treatment by dipping and pouring, Production of articles by dipping and pouring
Product characteristics	
Concentration of the Substance : in Mixture/Article	Covers percentage substance in the product up to 15%.
Physical Form (at time of use) :	liquid
Frequency and duration of use	
Exposure duration :	60 - 240 min
Remarks :	Inhalation, Dermal
Frequency of use :	<= 240 days/year
Human factors not influenced by risk r	nanagement
Breathing volume :	10 m3/day
Other operational conditions affecting Outdoor / Indoor	workers exposure Indoor

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

#### **Technical conditions and measures**

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %)

2.11 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

: Mixing operations (open systems)
: Covers percentage substance in the product up to 2%.
: liquid
: < 480 min : Inhalation, Dermal : <= 240 days/year
k management : 10 m3/day
ng workers exposure : Indoor
pints where emissions occur. (Effectiveness (of a measure): 80
personal protection, hygiene and health evaluation tested to EN374) in combination with 'basic' employee training. %)
olling worker exposure for: PROC8a: Transfer of ng/ discharging) from/ to vessels/ large containers at

Activity	: Material transfers
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year

Version 1	Revision Date 22.11.20	13	Print Date 27.02.2014	GB / EN
Human facto Breathing	ors not influenced by risk volume	managemer : 10 m3/day	nt /	
Other operat Outdoor /	tional conditions affecting	g workers ex : Indoor	posure	
Conditions a Wear suita Wear a res 90 %)	and measures related to p ble gloves tested to EN37 pirator conforming to EN	ersonal prof '4. (Effective 140 with Typ	tection, hygiene and health ev ness (of a measure): 80 %) be A filter or better. (Effectiver	valuation ness (of a measure):

# 2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity Product characteristics	: Material transfers, Bulk transfers, Dedicated facility
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risl	k management
Breathing volume	: 10 m3/day
Other operational conditions affectir	ng workers exposure
Technical conditions and measures	

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

## 2.14 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity	: Roller, spreader, flow application
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day

	Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN
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Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

## 2.15 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

2.16 Contributing scenario contr articles by dipping and pouring Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks	<ul> <li>rolling worker exposure for: PROC13: Treatment of</li> <li>: Treatment by dipping and pouring, Production of articles by dipping and pouring</li> <li>: Covers percentage substance in the product up to 2%.</li> <li>: liquid</li> <li>: &lt; 480 min</li> <li>: Inhalation, Dermal</li> </ul>
2.16 Contributing scenario contr articles by dipping and pouring Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>rolling worker exposure for: PROC13: Treatment of</li> <li>: Treatment by dipping and pouring, Production of articles by dipping and pouring</li> <li>: Covers percentage substance in the product up to 2%.</li> <li>: liquid</li> </ul>
2.16 Contributing scenario contr articles by dipping and pouring Activity	rolling worker exposure for: PROC13: Treatment of : Treatment by dipping and pouring, Production of articles by dipping and pouring
2.16 Contributing scenario contr articles by dipping and pouring	rolling worker exposure for: PROC13: Treatment of
Conditions and measures related to Wear suitable gloves tested to EN Wear a respirator conforming to E 90 %)	<ul> <li>personal protection, hygiene and health evaluation</li> <li>374. (Effectiveness (of a measure): 90 %)</li> <li>N140 with Type A filter or better. (Effectiveness (of a measure):</li> </ul>
Technical conditions and measures Provide extraction ventilation at p %)	; oints where emissions occur. (Effectiveness (of a measure): 80
Other operational conditions affect Outdoor / Indoor	ing workers exposure : Indoor
Human factors not influenced by ris Breathing volume	sk management : 10 m3/day
Exposure duration Remarks Frequency of use	: 60 - 240 min : Inhalation, Dermal : <= 240 days/year
Frequency and duration of use	
Physical Form (at time of use)	: liquid
Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use	: Covers percentage substance in the product up to 2%. : liquid

Version 1	Revision Date 22.11.2	201	3 Print Date 27.02.2014	GB / EN
Frequency	of use	:	<= 240 days/year	
Human facto Breathing	rs not influenced by ris volume	sk n :	nanagement 10 m3/day	
Other operat Outdoor / I	ional conditions affecti ndoor	ng :	workers exposure Indoor	
Technical co Provide ext %)	nditions and measures traction ventilation at po	oin	ts where emissions occur. (Effectiveness	s (of a measure): 80
Conditions a Wear suitat	nd measures related to ble gloves tested to EN	ре 374	ersonal protection, hygiene and health ev . (Effectiveness (of a measure): 80 %)	aluation
2.17 Contrib intimate cor	outing scenario contr ntact and only PPE av	oll vai	ing worker exposure for: PROC19: Ha lable	and-mixing with
Activity		:	Mixing operations (open systems), Prep for application	aration of material
Product char	acteristics		··· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··	
Concentration in Mixture/	tion of the Substance Article	:	Covers percentage substance in the pro	oduct up to 2%.
Physical F	orm (at time of use)	:	liquid	
Frequency a	nd duration of use			
Exposure	duration	:	< 480 min	
Remarks		:	Inhalation, Dermal	
Frequency	of use	:	<= 240 days/year	
Human facto	rs not influenced by ris	sk n	nanagement	
Breathing	volume	:	10 m3/day	
Other operat	ional conditions affecti	ng	workers exposure	

Outdoor / Indoor : Indoor

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

2.18 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles

Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	: Covers percentage substance in the product up to 2%. : solid
Frequency and duration of use Remarks	: Inhalation, Dermal

Version 1	Revision Date 22.11.2	2013	Print Date 27.02.2014	GB / EN
Human factors r Breathing vol	not influenced by ris ume	k manageme : 10 m3/da	nt Y	
Other operation Outdoor / Indo	al conditions affections	ng workers e : Indoor	xposure	
Technical condi Assumes a goo	tions and measures od basic standard of	f occupation	al hygiene is implemented.	
2.19 Contributi energy work-u	ng scenario contro p of substances be	olling worke ound in mat	er exposure for: PROC24: High erials and/ or articles	(mechanical)
Activity Product charact	eristics	: Operation	n and lubrication of high energy o	pen equipment
Concentration in Mixture/Arti	of the Substance	: Covers p	ercentage substance in the produce	ct up to 2%.
Physical Form	n (at time of use)	: solid		
Frequency and o Remarks	duration of use	: Inhalatio	n, Dermal	
Human factors r Breathing vol	not influenced by ris ume	k manageme : 10 m3/da	nt y	
Other operation Outdoor / Indo	al conditions affections	ng workers e : Indoor	xposure	
Technical condi Assumes a goo	tions and measures od basic standard of	f occupationa	al hygiene is implemented.	
2.20 Contributi batch processe significant con	ng scenario contro es for formulation tact)	olling worke of preparati	er exposure for: PROC5: Mixing ons and articles (multistage an	ı or blending in ıd/ or
Activity Product charact	eristics	: Mixing o	perations (open systems)	
Concentration in Mixture/Arti	of the Substance	: Covers p	ercentage substance in the produ	ct up to 0.5%.
Physical Form	n (at time of use)	: liquid		
Frequency and o	duration of use	400 mi		
Exposure dura Remarks	ation	: < 480 mir	ı Dermal	
Frequency of	use	: <= 240 da	ays/year	
Human factors r Breathing vol	not influenced by ris ume	k manageme : 10 m3/da	nt y	
Other operation Outdoor / Indo	al conditions affections	ng workers e : Indoor	xposure	

Version 1

Revision Date 22.11.2013

Print Date 27.02.2014

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

2.21 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

Activity Broduct characteristics	: Material transfers
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use Exposure duration Remarks	: < 480 min : Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ng workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.
Conditions and measures related to Wear suitable gloves tested to EN3	personal protection, hygiene and health evaluation 74. (Effectiveness (of a measure): 80 %)
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities	olling worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity	olling worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at : Material transfers, Bulk transfers, Dedicated facility
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Erequency of use	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt; - 240 days/year</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> </ul>
2.22 Contributing scenario contro substance or preparation (chargi dedicated facilities Activity Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affectin Outdoor / Indoor	<ul> <li>billing worker exposure for: PROC8b: Transfer of ng/ discharging) from/ to vessels/ large containers at</li> <li>Material transfers, Bulk transfers, Dedicated facility</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>
Version 1 Revision Date 22.11.2013 Print Date 27.02.2014

Assumes a good basic standard of occupational hygiene is implemented.

### 2.23 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity	: Roller, spreader, flow application
Concentration of the Substance	Covers percentage substance in the product up to 0.5%
in Mixture/Article	
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris Breathing volume	k management : 10 m3/day
Other operational conditions affecti	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
Conditions and measures related to Wear suitable gloves tested to EN	personal protection, hygiene and health evaluation 874. (Effectiveness (of a measure): 80 %)
2.24 Contributing scenario contr spraying	olling worker exposure for: PROC11: Non industrial
Activity	
	· Spraving Manual
Product characteristics	: Spraying, Manual
Product characteristics Concentration of the Substance	: Spraying, Manual : Covers percentage substance in the product up to 0.5%.
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use)	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affecti Outdoor / Indoor	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>
Product characteristics Concentration of the Substance in Mixture/Article Physical Form (at time of use) Frequency and duration of use Exposure duration Remarks Frequency of use Human factors not influenced by ris Breathing volume Other operational conditions affecti Outdoor / Indoor	<ul> <li>Spraying, Manual</li> <li>Covers percentage substance in the product up to 0.5%.</li> <li>liquid</li> <li>&lt; 480 min</li> <li>Inhalation, Dermal</li> <li>&lt;= 240 days/year</li> <li>k management</li> <li>10 m3/day</li> <li>ng workers exposure</li> <li>Indoor</li> </ul>

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

2.25 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Activity	: Treatment by dipping and pouring, Production of articles by dipping and pouring
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecting	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.

# 2.26 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

Activity	: Mixing operations (open systems), Preparation of material for application
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	management
Breathing volume	: 10 m3/day
Other operational conditions affectin	g workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 90 %)

# 2.27 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles

Product characteristics Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: SOIId
Frequency and duration of use Remarks	: Inhalation, Dermal
Human factors not influenced by risk Breathing volume	k management : 10 m3/day
Other operational conditions affectin Outdoor / Indoor	ig workers exposure : Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.

# 2.28 Contributing scenario controlling worker exposure for: PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles

Activity Product characteristics	: Operation and lubrication of high energy open equipment
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: solid
Frequency and duration of use	
Remarks	: Inhalation, Dermal
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecting	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	f occupational hygiene is implemented.

### 3. Exposure estimation and reference to its source

Version 1 Revision Date 22.11.2013 Print Date 27.02.2014

GB / EN

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC8a	EUSES		Fresh water		0.0032 mg/L	0.018
			Fresh water		1.6 mg/kg	0.018
			sediment		dry weight	
			Marine		0.0004 mg/L	0.016
			water			
			Marine		0.212 mg/kg	0.016
			sediment		dry weight	
			Sewage		0.018 mg/L	0.0011
			treatment			
			plant			
			Soil		0.114 mg/kg	0.006
					dry weight	
			Grassland		0.114 mg/kg	0.006
					dry weight	

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC5	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.366 mg/m3	0.3656
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.731 mg/m3	0.0001
PROC8a	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.069 mg/kg bw/day	0.1203
			Short term inhalation	0.914 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers the percentage of the substance in the product up to 25 %.	Long term inhalation	0.595 mg/m3	0.595
			Long term dermal	0.0068 mg/kg bw/day	0.012
PROC5	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.0082 mg/kg bw/day	0.014
			Short term inhalation	0.914 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457

Version 1	Revision Date 22.11.2013 Print Date 27.02.2014				GB / EN
			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term	0.914 mg/m3	0.0002
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.357 mg/m3	0.357
			Long term dermal	0.004 mg/kg bw/dav	0.007
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.1444
			Short term inhalation	0.914 mg/m3	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.121 mg/kg bw/day	0.1219
		· · ·	Long term dermal	0.214 mg/m3	0.3759
			Short term inhalation	0.243 mg/m3	< 0.0001
PROC13	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term	0.548 mg/kg bw/day	0.5484
		· · ·	Long term dermal	0.0411 mg/m3	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC5	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.05 mg/kg bw/day	0.0962
			Short term inhalation	1.22 mg/m3	0.0002
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term	0.305 mg/m3	0.305
			Long term dermal	0.0548 mg/kg bw/day	0.0962
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m3	0.119
			Long term dermal	0.014 mg/kg bw/day	0.024
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.304 mg/m3	0.304
			Long term dermal	0.109 mg/kg bw/day	0.192
			Short term inhalation	0.609 mg/m3	< 0.0001
PROC11	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.146 mg/kg bw/day	0.146
		• •	Long term dermal	0.214 mg/m3	0.3759
			Short term inhalation	0.243 mg/m3	< 0.0001

Version 1	Revision Date 22.11.2013         Print Date 27.02.2014				GB / EN
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.238 mg/m3	0.238
			Long term dermal	0.011 mg/kg bw/day	0.019
PROC19	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.304 mg/m3	0.304
			Long term dermal	0.056 mg/kg bw/dav	0.099
PROC21	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.06 mg/m3	0.06
			Long term dermal	0.0566 mg/kg bw/day	0.0992
			Short term inhalation	0.12 mg/m3	< 0.0001
PROC24	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.06 mg/m3	0.06
			Long term dermal	0.0566 mg/kg bw/day	0.0992
			Short term inhalation	0.12 mg/m3	< 0.0001
PROC5	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m3	0.12
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC8a	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m3	0.76
			Long term dermal	0.013 mg/kg bw/dav	0.024
PROC8b	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m3	0.297
		• •	Long term dermal	0.034 mg/kg bw/day	0.06
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m3	0.76
			Long term dermal	0.027 mg/kg bw/day	0.048
PROC11	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.3 mg/m3	0.3046
		• •	Long term dermal	0.11 mg/kg bw/day	0.188
			Short term inhalation	1.22 mg/m3	0.0001
PROC13	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.297 mg/m3	0.297
			Long term dermal	0.068 mg/kg bw/day	0.12
PROC19	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.076 mg/m3	0.0762
		• • • • • • • • • • • • • • • • • • •	Long term dermal	0.14 mg/kg bw/day	0.2481
			Short term inhalation	1.52 mg/m3	< 0.0001

Version 1 Revision Date 22		2.11.2013 Print Date 27.02.2014			GB / EN	
PROC21	ECETOC TRA	Covers p in the j	ercentage substance product up to 0.5%.	Long term inhalation	0.02 mg/m3	0.015
				Long term dermal	0.0141 mg/kg bw/day	0.0248
				Short term inhalation	0.03 mg/m3	< 0.0001
PROC24	ECETOC TRA	Covers p in the	ercentage substance product up to 0.5%.	Long term inhalation	0.02 mg/m3	0.015
				Long term dermal	0.0141 mg/kg bw/day	0.0248
				Short term inhalation	0.03 mg/m3	< 0.0001

ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available PROC21: Low energy manipulation of substances bound in materials and/ or articles PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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

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

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

### 1. Short title of Exposure Scenario: Epoxy, Polyurethane Curing Agent

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental Release Categories	: ERC8b, ERC8c, ERC8e, ERC8f: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Process categories	: PROC10: Roller application or brushing PROC11: Non industrial spraying

2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8c, ERC8e, ERC8f: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix and the systems of reactive substances in open systems.

Amount used	
Regional use tonnage (tonnes/year):	: 2560 ton(s)/year
Fraction of Regional tonnage used locally:	: 3.8 %
Maximum daily site tonnage (kg/day):	: 442 kg/day
Environment factors not influenced b	py risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions a	ffecting environmental exposure
Number of emission days per year	: 220
Emission or Release Factor: Air	: <b>0.11</b> %
Emission or Release Factor: Water	: 0%
Emission or Release Factor: Soil	: 0%
Remarks	: No waste water is released to the environment
Technical conditions and measures	Organizational measures
Exposure time	: Continuous use/release
Compartment	· Fresh water Fresh water sediment Marine water Marine
oompartment	sediment, Soil, Grassland, Sewage treatment plant

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 Revision Date 22.11.2013
 Print Date 27.02.2014
 GB / EN

### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity Product characteristics	: Roller, spreader, flow application
Concentration of the Substance	: Covers percentage substance in the product up to 15%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: 15 - 60 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	<pre>&lt; management</pre>
Breathing volume	: 10 m3/day
Other operational conditions affection	ig workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Assumes a good basic standard of	occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( supervision controls. (Effectivenes Wear a respirator conforming to El 95 %)	personal protection, hygiene and health evaluation rested to EN374) in combination with intensive management s (of a measure): 98 %) I140 with Type A filter or better. (Effectiveness (of a measure):

### 2.3 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Activity	: Spraying, Manual
Product characteristics	
Concentration of the Substance in Mixture/Article	: Covers percentage substance in the product up to 10%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: 15 - 60 min
Remarks	: Inhalation. Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecting	ng workers exposure
Outdoor / Indoor	: Indoor
Technical conditions and measures Provide extraction ventilation at po %)	pints where emissions occur. (Effectiveness (of a measure): 90

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 98 %) Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

# 2.4 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity Product characteristics	: Roller, spreader, flow application
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti Outdoor / Indoor	ng workers exposure : Indoor
Conditions and measures related to Wear chemically resistant gloves ( (Effectiveness (of a measure): 80 % Wear a respirator conforming to E 90 %)	personal protection, hygiene and health evaluation (tested to EN374) in combination with 'basic' employee training %) N140 with Type A filter or better. (Effectiveness (of a measure):

# 2.5 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Activity Product characteristics	: Spraying, Manual
Concentration of the Substance	: Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 240 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by risk	<pre>&lt; management</pre>
Breathing volume	: 10 m3/day
Other operational conditions affectin	ng workers exposure
Outdoor / Indoor	: Indoor

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

#### Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 90 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

# 2.6 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Activity	: Roller, spreader, flow application
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.
Physical Form (at time of use)	: liquid
Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year
Human factors not influenced by ris	k management
Breathing volume	: 10 m3/day
Other operational conditions affecti	ng workers exposure
Technical conditions and measures Assumes a good basic standard o	f occupational hygiene is implemented.
Conditions and measures related to Wear chemically resistant gloves ( (Effectiveness (of a measure): 80 %	personal protection, hygiene and health evaluation tested to EN374) in combination with 'basic' employee training %)
2.7 Contributing scenario contro spraying	lling worker exposure for: PROC11: Non industrial
Activity	· Spraving Manual
Product characteristics	. opraying, manual
Concentration of the Substance	: Covers percentage substance in the product up to 0.5%.

Frequency and duration of use	
Exposure duration	: < 480 min
Remarks	: Inhalation, Dermal
Frequency of use	: <= 240 days/year

Physical Form (at time of use)

: liquid

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014

Human factors not influenced by risk management Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure Outdoor / Indoor : Indoor

Conditions and measures related to personal protection, hygiene and health evaluation Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 80 %)

Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

### 3. Exposure estimation and reference to its source

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC8b	EUSES		Fresh water		0.0014 mg/L	0.0075
			Fresh water sediment		0.722 mg/kg dry weight	0.0075
			Marine water		0.0001 mg/L	0.0037
			Marine sediment		0.072 mg/kg dry weight	0.0037
			Sewage treatment plant		0 mg/L	0
			Soil		0.114 mg/kg dry weight	0.006
			Grassland		0.114 mg/kg dry weight	0.006

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC10	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/m3	0.457
			Long term dermal	0.082 mg/kg bw/day	0.1444
			Short term inhalation	0.914 mg/m3	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 10%.	Long term inhalation	0.121 mg/kg bw/day	0.1219
			Long term dermal	0.214 mg/m3	0.3759
			Short term inhalation	0.243 mg/m3	< 0.0001

Version 1	Revision Date 2	2.11.2013 Print Date 27.	02.2014		GB / EN
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.109 mg/kg bw/day	0.194
			Short term inhalation	1.22 mg/m3	0.0002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.1218 mg/kg bw/day	0.1219
			Long term dermal	0.21 mg/m3	0.3759
			Short term inhalation	0.24 mg/m3	0.01
PROC10	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.76 mg/m3	0.76
			Long term dermal	0.027 mg/kg bw/day	0.048
			Short term inhalation	1.52 mg/m3	0.002
PROC11	ECETOC TRA	Covers percentage substance in the product up to 0.5%.	Long term inhalation	0.3 mg/m3	0.3046
			Long term dermal	0.11 mg/kg bw/day	0.188
			Short term inhalation	0.6 mg/m3	0.005

ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix PROC10: Roller application or brushing PROC11: Non industrial spraying

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm

Version 1	Revision Date 22.11.2013	Print Date 27.02.2014	GB / EN

### 1. Short title of Exposure Scenario: Consumer use

Main User Groups	: SU 21: Consumer uses: Private households (= general public = consumers)
Environmental Release Categories	: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Chemical product category	: PC1: Adhesives, sealants PC9b: Fillers, putties, plasters, modelling clay

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b, ERC8c, ERC8d, ERC8e, ERC8f: Wide dispersive indoor use of processing aids in open systems, Wide dispersive indoor use of reactive substances in open systems, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive outdoor use of reactive substances in open systems, wide dispersive ottoor use of processing aids in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive outdoor use resulting in inclusion into or onto a matrix.

Product characteristics Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 25 %.
Amount used Maximum daily site tonnage (kg/day):	: 14 kg/day
Environment factors not influenced	by risk management
Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100
Other given operational conditions	affecting environmental exposure
Number of emission days per vear	: 220
Emission or Release Factor: Air	: 0%
Emission or Release Factor:	: 1%
Water	
Emission or Release Factor: Soil	: 0.5 %

#### 2.2 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

Activity

: Mixing and loading

Version 1	Revision Date 22.11.2	013	B Print Date 27.02.2014	GB / EN
Product characte Concentration in Mixture/Artic Physical Form	eristics of the Substance cle (at time of use)	:	Covers the percentage of the substance in to 25 %. liquid	the product up
Amount used Amount used p Remarks Amount used Remarks	per event	: : :	20 gram Inhalation 0.05 gram Dermal	
Frequency and d Application du Exposure dura Frequency of u Remarks	uration of use ration tion ıse	: : :	5 min 5 min 3 days/year Inhalation, Dermal	
Human factors no Dermal exposu	ot influenced by ris Ire	k n :	nanagement 2 cm2	
Other given oper Outdoor / Indo Room size Ventilation rate Conditions and n protection and hy	ational conditions a or e per hour neasures related to ygiene)	affe : : pro	ecting consumers exposure Indoor, Outdoor 1 m3 0.6 otection of consumer (e.g. behavioural advie	ce, personal
Consumer Mea	asures	:	Avoid using at a product concentration gre	ater than 25%
2.3 Contributing	g scenario contro	llin	g consumer exposure for: PC1: Adhesi	ves, sealants
Activity Product characte Concentration in Mixture/Artic Physical Form	eristics of the Substance cle (at time of use)	:	Application Covers the percentage of the substance in to 5%. liquid	the product up
Amount used Amount used p Remarks Amount used Remarks	per event	: :	20 gram Inhalation 0.1 gram Dermal	
Frequency and d Application du Exposure dura Frequency of u Remarks	uration of use ration tion ıse	: : :	30 min 90 min 3 days/year Inhalation, Dermal	
Human factors no Dermal exposu	ot influenced by ris Ire	kn :	nanagement 43 cm2	
Other given oper	ational conditions a	affe	ecting consumers exposure	

Version 1	Revision Date 22.11.2	201:	B Print Date 27.02.2014	GB / EN
Outdoor / I	ndoor	:	Indoor, Outdoor	
Room size		:	20 m3	
Ventilation	rate per hour	:	0.6	
Conditions a	nd measures related to	pr	otection of consumer (e.g. behavioural advice.	personal
protection an	nd hygiene)	<b>P</b> .		p=:==:
Consumer	Measures	:	Avoid using at a product concentration greate	er than 5%
2.4 Contribu	iting scenario contro	llin	g consumer exposure for: PC9b: Fillers, p	utties,
plasters, mo	odelling clay			
Activity			Mixing and loading	
Product char	acteristics	•		
Concentrat	tion of the Substance	:	Covers the percentage of the substance in the	e product up
in Mixture/	Article	•	to 25 %.	, biograp
Physical Fe	orm (at time of use)	:	liquid	
Amount used	1			
Amount us	ed per event	:	200 gram	
Remarks		:	Inhalation	
Amount us	ed	:	0.02 gram	
Remarks		:	Dermal	
Frequency ar	nd duration of use			
Application	n duration	:	5 min	
Exposure	duration	:	5 min	
Frequency	of use	:	2 davs/vear	
Remarks		:	Inhalation, Dermal	
Human facto	rs not influenced by ris	k n	nanagement	
Dermal exp	osure	:	2 cm2	
Other given of	operational conditions a	atte	cting consumers exposure	
Outdoor / I	ndoor	:	Indoor, Outdoor	
Room size		:	1 m3	
ventilation	rate per nour	:	0.6	
Conditions	nd management related to		testion of consumer (or a holowise well advise	noroonal
conditions a	nu measures related to	þ	Diection of consumer (e.g. benavioural advice,	personal
Consumer	Moasuros		Avoid using at a product concentration great	or than 25%
Consumer	ineasures	•	Avoid using at a product concentration greate	fi tildii 25 /0
0.5.0				
plasters, mo	iting scenario contro odelling clay		g consumer exposure for: PC9b: Fillers, p	utties,
Activity		•	Application	
Product char	acteristics	-		
Concentrat	tion of the Substance	:	Covers the percentage of the substance in the	e product up
in Mixture/	Article	-	to 5%.	- 1
Physical Fe	orm (at time of use)	:	liquid	
-	. ,		•	

Version 1	Revision Date 22	.11.2013	Print Date 27.02.2014	GB / EN
Amount used				
Amount used	d per event	: 200 gr	am	
Remarks	•	: Inhala	tion	
Amount used	ł	: 1 gran	n	
Remarks		: Derma	al	
Frequency and	duration of use			
Application c	duration	: 30 mir	1	
Exposure du	ration	: 90 mir	ı	
Frequency of	f use	: 2 days	s/year	
Remarks		: Inhala	tion, Dermal	
Human factors	not influenced b	y risk manage	ment	
Dermal expo	sure	: 22 cm	2	
Other given op	erational condition	ons affecting o	consumers exposure	
Outdoor / Ind	loor	: Indoo	r, Outdoor	
Room size		: 20 m3		
Ventilation ra	ate per hour	: 0.6		
0				

protection and hygiene) Conditions and measures related to protection of consumer (e.g. behavioural advice, personal Consumer Measures

: Avoid using at a product concentration greater than 5%

### 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartme nt	Value	Level of Exposure	RCR
ERC8a	EUSES		Fresh water		0.0032 mg/L	0.017
			Fresh water		1.6 mg/kg	0.008
			Marine water		0.0004 mg/L	0.017
			Marine sediment		0.212 mg/kg dry weight	0.008
			Sewage treatment plant		0.018 mg/L	0.004
			Soil		0.114 mg/kg dry weight	0.006
			Grassland		0.114 mg/kg dry weight	0.006

#### Consumers

Contributing ScenarioExposure Assessment MethodSpecific conditions	Value	Level of Exposure	RCR
-----------------------------------------------------------------------------	-------	----------------------	-----

Version 1	Revision Date 22.11.2013 Print Date 27.02.2014				GB / EN
DC1	"Consovno"	Mixing and loading	l ong form	0.020 ma/m2	0.17
FCI	Consexpo		inhalation	0.039 mg/m3	0.17
			Long term dermal	0.0002 mg/kg bw/day	< 0.001
			Short term inhalation	11.2 mg/m3	0.11
PC1	"Consexpo"	Application	Long term inhalation	0.188 mg/kg bw/day	0.82
			Long term dermal	0.0001 mg/m3	< 0.001
			Short term inhalation	3 mg/m3	0.03
PC9b	"Consexpo"	Mixing and loading	Long term inhalation	0.04 mg/m3	0.17
			Long term dermal	< 0.0001 mg/kg bw/day	< 0.001
			Short term inhalation	11.5 mg/m3	0.11
PC9b	"Consexpo"	Application	Long term inhalation	0.191 mg/kg bw/day	0.83
			Long term dermal	0.0001 mg/m3	< 0.001
			Short term inhalation	3.1 mg/m3	0.03

ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix PC1: Adhesives, sealants PC9b: Fillers, putties, plasters, modelling clay

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream\_users\_en.htm