SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

AkzoNobel
Tomorrow's Answers Today

TRIETHYLENETETRAMINE (TETA)

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

1.1 Product identifier

Trade name	:	TRIETHYLENETETRAMINE (TETA)
Substance name	:	Triethylenetetramine linear, cyclic and branched
Index-No.	:	612-059-00-5
REACH Registration Number	:	01-2119487919-13-0003

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

Use of the Substance/Mixture	:	Specific use(s):	Refer to attached exposure 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
Telephone	:	4630385000
Telefax	:	46303770551
E-mail address	:	RegulatoryAffairs@akzonobel.com

1.4 Emergency telephone number

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 toxicity, 4, H302
Acute toxicity, 4, H312
Skin corrosion, 1B, H314
Skin sensitisation, 1, H317
Chronic aquatic toxicity, 3, H412

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

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. Continue rinsing.
	P310	Immediately call a POISON CENTER or doctor/ physician.

Hazardous components which must be listed on the label:

Triethylenetetramine 112-24-3

2.3 Other hazards

No further data available.

PBT and vPvB 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.

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 Substances of Very High Concern for Authorisation (Article 59). : not applicable

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.

Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
Do not induce vomiting! May cause chemical burns in mouth and throat.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : corrosive effects
sensitising effects

Risks : No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No information available.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : Use 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.

6.3 Methods and materials for containment and cleaning up

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

6.4 Reference to other sections

Additional advice	:	For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	:	For personal protection see section 8. Avoid formation of aerosol. Do not breathe vapours or spray mist. Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations. Avoid contact with skin, eyes and clothing.
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Reacts with copper, aluminium, zinc and their alloys.
Other data	:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(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

	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 controls

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form	:	liquid
Colour	:	light yellow
Odour	:	ammoniacal
Odour Threshold	:	no data available

Safety data

pH	:	10.7 at 1 % solution
Melting point/freezing point	:	< -20 °C
Boiling point/boiling range	:	274.6 °C
Flash point	:	118 °C
Ignition temperature	:	335 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	The product is not flammable.
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	< 0.1 hPa at 20 °C
Relative vapour density	:	no data available
Density	:	980 kg/m3 at 20 °C
Relative density	:	0.971 at 25 °C
Water solubility	:	> 1,000 g/l at 20 °C Very soluble.
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	log Pow: -2.65 at 20 °C
Auto-ignition temperature	:	325 °C
Decomposition temperature	:	no data available
Viscosity, dynamic	:	30 mPa.s at 20 °C

Viscosity, kinematic	:	ca. 30 mm2/s at 20 °C
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

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	:	Reacts with copper, aluminium, zinc and their alloys. Strong acids and oxidizing agents Halogenated compounds

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

Eyes : Causes serious eye damage.

Ingestion : Harmful if swallowed.
Causes burns.

Toxicology Assessment
Further information : No further data available.

11.1 Information on toxicological effects

Test result
Sensitisation : May cause sensitisation of susceptible persons.

Toxicology data for the components:
Toxicology Assessment
Triethylenetetramine
CMR effects : Teratogenicity: Developmental effects have been observed in an animal study with high doses of a related salt. The relevance of those effects are currently under investigation.

Test result
Triethylenetetramine
Acute oral toxicity : LD50: > 300 - 2,000 mg/kg
Species: rat

Acute dermal toxicity : LD50: > 1,000 - 2,000 mg/kg
Species: rabbit

Skin irritation : Result: Causes burns.

Sensitisation : Species: guinea pig
Result: May cause sensitisation by skin contact.

Germ cell mutagenicity

Genotoxicity in vivo : Result:
No evidence 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:

Ecotoxicology Assessment
Triethylenetetramine

Results of PBT assessment	:	This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic) This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

Test result
Triethylenetetramine

Toxicity to fish	:	LC50: > 100 mg/l Exposure time: 96 h Species: Pimephales promelas (fathead minnow)
Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 10 - 100 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Toxicity to algae	:	ErC50: > 10 - 100 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae)

12.2 Persistence and degradability

Product information:

Biodegradability	:	Result: Not readily biodegradable.

Components:
Triethylenetetramine

Biodegradability	:	Result: Not readily biodegradable. Method: OECD Test Guideline 302B

12.3 Bioaccumulative potential

Components:
Triethylenetetramine

Bioaccumulation	:	no data available

12.4 Mobility in soil

Components:
Triethylenetetramine

Mobility	:	immobile

12.5 Results of PBT and vPvB assessment

Product information:

PBT and vPvB 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.

Components:
Triethylenetetramine

PBT and vPvB assessment	:	This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic) This substance is not considered to be vPvB (very Persistent

nor very Bioaccumulating)

12.6 Other adverse effects

Components:
Triethylenetetramine

Biochemical Oxygen Demand (BOD)	:	no data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste Dispose of contents/container in accordance with local regulation.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR	:	UN 2259
RID	:	UN 2259
IMDG-Code	:	UN 2259
IATA-DGR	:	UN 2259

14.2 Proper shipping name

ADR	:	TRIETHYLENETETRAMINE
RID	:	TRIETHYLENETETRAMINE
IMDG-Code	:	TRIETHYLENETETRAMINE
IATA-DGR	:	Triethylenetetramine

14.3 Transport hazard class

ADR	:	8
RID	:	8
IMDG-Code	:	8
IATA-DGR	:	8

14.4 Packing group

ADR

Packing group	:	II
Classification Code	:	C7
Hazard Identification Number	:	80
Labels	:	8
Tunnel restriction code	:	(E)

RID

Packing group	:	II
Classification Code	:	C7
Hazard Identification Number	:	80
Labels	:	8

IMDG-Code

Packing group	:	II
Labels	:	8
EmS Code	:	F-A, S-B

IATA-DGR

Packing instruction (cargo aircraft)	:	855
Packing instruction (passenger aircraft)	:	851
Packing instruction (LQ)	:	Y840
Packing group	:	II
Labels	:	8

14.5 Environmental hazards

ADR

Environmentally hazardous	:	no

RID

Environmentally hazardous	:	no

IMDG-Code

Marine pollutant	:	no

IATA-DGR

Environmentally hazardous	:	no

14.6 Special precautions for user

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 Hazard Legislation	:	96/82/EC not applicable
Water contaminating class (Germany)	:	WGK 2 water endangering

Notification status

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.

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

15.2 Chemical Safety Assessment

Triethylenetetramine	:	A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

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

H302	Harmful if swallowed.
H312	Harmful 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.

Full text of R-phrases referred to under sections 2 and 3

R21/22	Harmful in contact with skin and if swallowed.
R34	Causes burns.
R43	May cause sensitisation by skin contact.
R52	Harmful to aquatic organisms.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.

Explanations for possible abbreviations mentioned in section 2

PBT	:	PBT: Persistent, bioaccumulative and toxic.
vPvB	:	vPvB: Very persistent and very bioaccumulative.
OEL	:	OEL: Occupational exposure limit.

Notification status explanation

CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances (METI)
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

Further information

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

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

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**

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**
Environmental Release Categories	:	**ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)**
Process categories	:	**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)** **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)** **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 by risk management

Flow rate	:	**83,333.3 m3/h**
Dilution Factor (River)	:	**1,000**

Other given operational conditions affecting environmental exposure

Number of emission days per year	:	**300**

Emission or Release Factor: Air : **0.11 %**
Emission or Release Factor: Water : **40.3 ppm**
Emission or Release Factor: Soil : **0.01 %**
Provide, with either onsite or domestic wastewater treatment, a total wastewater removal efficiency of (%) : **> 37.4 %**

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**

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 : **<= 300 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.

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 : **General exposures, Process sampling**

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 : < 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 300 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
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 %)

2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Activity : General exposures (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 : <= 300 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
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 %)
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

Activity : Material transfers

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 : <= 300 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

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 %)

Wear a respirator conforming to EN140 with Type A filter or better. (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 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 : <= 300 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

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 %)
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**
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	:	**< 60 min**
Remarks	:	**Inhalation, Dermal**
Frequency of use	:	**<= 300 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
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 %)
Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness (of a measure): 95 %)

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	:	**Bulk transfers, Dedicated facility**
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	:	**< 240 min**
Remarks	:	**Inhalation, Dermal**

Frequency of use : <= 300 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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 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 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 : <= 300 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
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 %)
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 : Laboratory activities
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 : **15 - 60 min**
Remarks : **Inhalation, Dermal**
Frequency of use : **<= 300 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
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 %)

3. Exposure estimation and reference to its source

Environment

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

		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**

			Short term inhalation	**0.55 mg/m3**	**0.0002**
PROC9	**ECETOC TRA**	**Covers the percentage of the substance in the product up to 100 % (unless stated differently).**	**Long term inhalation**	**0.3 mg/m3**	**0.3**
			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 percentage of the substance in the product up to 100 % (unless stated differently).**	**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

1. Short title of Exposure Scenario: Industrial formulation

Main User Groups	:	**SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites**
Environmental Release Categories	:	**ERC2: Formulation of preparations**
Process categories	:	**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)** **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)** **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 affecting 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	:	**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**

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 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	**:**	**General exposures, Process sampling**

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	**:**	**< 240 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 workers exposure
Outdoor / Indoor : Indoor

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

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 %)

2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Activity : General exposures (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 workers exposure
Outdoor / Indoor : Indoor

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

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 %)

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

Activity : Material transfers
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 workers exposure
Outdoor / Indoor : Indoor

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

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 %)

2.6 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 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 workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures

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

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 %)

2.7 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**
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	:	**< 60 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 workers exposure		
Outdoor / Indoor	:	**Indoor**

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

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): 95 %)

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 : Bulk transfers, Dedicated facility

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 : < 240 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 workers exposure

Outdoor / Indoor : 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 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 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 workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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

%)

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	:	**Laboratory activities**
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	:	**15 - 60 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 workers exposure		
Outdoor / Indoor	:	**Indoor**

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

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 %)

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

Activity	:	**Mixing operations (open systems)**
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 : <= 225 days/year

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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.12 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
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 : <= 225 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

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 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 : <= 225 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.14 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 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 : <= 225 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting 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

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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

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 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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented.

2.18 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 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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting 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

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	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

			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
			Short term inhalation	0.55 mg/m3	0.0002
PROC9	ECETOC TRA	Covers the percentage of the substance in the product up to 100 % (unless stated differently).	Long term inhalation	0.3 mg/m3	0.3
			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 percentage of the substance in the product up to 100 % (unless stated differently).	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 percentage substance in the product 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 percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m3	0.119

			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)

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

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

Main User Groups	:	**SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites**
Environmental Release Categories	:	**ERC2: Formulation of preparations**
Process categories	:	**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)** **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)** **PROC15: Use as laboratory reagent**

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

Amount used

Regional use tonnage (tonnes/year):	:	**2560 ton(s)/year**
Fraction of Regional tonnage used locally:	:	**100 %**
Maximum daily site tonnage (kg/day):	:	**11378 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 year	:	**225**
Emission or Release Factor: Air	:	**0.11 %**
Emission or Release Factor: Water	:	**50 ppm**
Emission or Release Factor: Soil	:	**0 %**

Remarks : **SpERC: CEPE 3**

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**

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 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 : **General exposures, Process sampling**

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 : **< 240 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 workers exposure
Outdoor / Indoor : Indoor

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

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 %)

2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Activity : General exposures (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 workers exposure
Outdoor / Indoor : Indoor

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

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 %)

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

Activity : Material transfers

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 workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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

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 %)

2.6 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 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 workers exposure

Outdoor / Indoor : Indoor

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

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 %)

2.7 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**
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	:	**< 60 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 workers exposure		
Outdoor / Indoor	:	**Indoor**

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

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): 95 %)

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 : Bulk transfers, Dedicated facility

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 : < 240 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 workers exposure

Outdoor / Indoor : 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 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 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 workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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

%)

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	**:**	**Laboratory activities**
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	**:**	**15 - 60 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 workers exposure		
Outdoor / Indoor	**:**	**Indoor**

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

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 %)

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

Activity	**:**	**Mixing operations (open systems)**
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 : <= 225 days/year

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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.12 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
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 : <= 225 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

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 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 : <= 225 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.14 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 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 : <= 225 days/year

Human factors not influenced by risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting 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

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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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 suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

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 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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented.

2.18 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 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 risk management

Breathing volume : 10 m3/day

Other operational conditions affecting 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

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	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

			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**
			Short term inhalation	**0.55 mg/m3**	**0.0002**
PROC9	**ECETOC TRA**	**Covers the percentage of the substance in the product up to 100 % (unless stated differently).**	**Long term inhalation**	**0.3 mg/m3**	**0.3**
			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 percentage of the substance in the product up to 100 % (unless stated differently).**	**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 percentage substance in the product 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 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	0.0004
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

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

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	:	**ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**
Process categories	:	**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)** **PROC16: Using material as fuel sources, limited exposure to unburned product to be expected**

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 affecting 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**

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 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

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.3 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

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

Outdoor / Indoor : Indoor

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 '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	:	**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		
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 '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	:	**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		

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.6 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 : 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
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 %)

2.7 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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Assumes a good basic standard of occupational hygiene is implemented.

2.8 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
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 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 %)

2.9 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
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 affecting workers exposure
Outdoor / Indoor : Indoor

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 : 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 : < 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.

2.11 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 : 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 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	Compartment	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

			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

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	:	**PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities** **PROC16: Using material as fuel sources, limited exposure to unburned product to be expected**

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/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 affecting 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**

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 : 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

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 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 : 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

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 %)

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

Activity : Material transfers

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 : <= 220 days/year

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 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 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 : <= 220 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.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment	Specific conditions	Compartment	Value	Level of Exposure	RCR

	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

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

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

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):	:	**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 affecting 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**

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 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

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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.3 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

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

Outdoor / Indoor : Indoor

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 '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	:	**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		
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 '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	:	**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		
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 '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 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.

2.7 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**
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 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 %)

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	:	**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	:	**< 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 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 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	Compartment	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

		in the product up to 0.5%.	**inhalation**		
			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**

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

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

Main User Groups	:	**SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites**
Environmental Release Categories	:	**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**
Process categories	:	**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)** **PROC10: Roller application or brushing** **PROC13: Treatment of articles by dipping and pouring** **PROC14: Production of preparations or articles by tabletting, compression, 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/year):	:	**2560 ton(s)/year**
Fraction of Regional tonnage used locally:	:	**100 %**
Maximum daily site tonnage (kg/day):	:	**7014 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 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 %**

domestic wastewater treatment, a total wastewater removal efficiency of (%)

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**

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 in Mixture/Article	:	**Covers the percentage of the substance in the product up to 25 %.**
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 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 %)

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

Activity	:	**Material transfers**
Product characteristics		
Concentration of the Substance in Mixture/Article	:	**Covers the percentage of the substance in the product up to 25 %.**
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 : Indoor

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

Activity : Bulk transfers, Dedicated facility
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.
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 : Indoor

Technical conditions and measures
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

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 %)

2.5 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 in Mixture/Article	**:**	**Covers the percentage of the substance in the product up to 25 %.**
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	**:**	**Indoor**

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 %)

Wear a respirator conforming to EN140 with Type A filter or better. (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 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 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 %)

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 %)

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

Activity : Calendering (including Banburys)

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 : < 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 workers exposure

Outdoor / Indoor : Indoor

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 %)

2.8 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

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 : < 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 workers exposure

Outdoor / Indoor : Indoor

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 %)
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**
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	:	**15 - 60 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 workers exposure		
Outdoor / Indoor	:	**Indoor**

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 %)

2.10 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**
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	:	**< 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 workers exposure
Outdoor / Indoor : Indoor

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: 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 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 : < 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 workers exposure
Outdoor / Indoor : Indoor

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 %)

2.12 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 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 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 %)

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 %)

2.13 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 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 %)

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 %)

2.14 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 : 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 : <= 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
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 %)

2.15 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 2%.
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 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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.16 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

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 : **<= 225 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
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 'basic' employee training. (Effectiveness (of a measure): 90 %)

2.17 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**
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 : **<= 225 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
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 'basic' employee training. (Effectiveness (of a measure): 90 %)

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 : 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 : <= 225 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.

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 %)

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

Activity : 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 : <= 225 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.

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 %)

2.20 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

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 %)

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 %)

2.21 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 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

Outdoor / Indoor : Indoor

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 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 : **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
Outdoor / Indoor : **Indoor**

Technical conditions and measures
Assumes a good basic standard of occupational hygiene is implemented.

2.23 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 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.

2.24 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

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 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 %)

2.25 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**

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 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.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

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

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 : < 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 workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

Activity : 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 : < 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 workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented.

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

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 : Indoor

Technical conditions and measures
Assumes a good basic standard of occupational hygiene is implemented.

2.29 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 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.

2.30 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 : 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 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	Compartment	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		0.16 mg/kg dry weight	0.0084
			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

		to 25 %.			
			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 inhalation	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/day	0.014
PROC13	ECETOC TRA	Covers percentage substance	Long term	0.548 mg/kg	0.5484

		in the product up to 15%.	inhalation	bw/day	
			Long term dermal	0.0411 mg/m3	0.0722
			Short term inhalation	1.097 mg/m3	0.0002
PROC14	ECETOC TRA	Covers percentage substance in the product up to 15%.	Long term inhalation	0.457 mg/kg bw/day	0.457
			Long term dermal	0.0102 mg/m3	0.018
			Short term inhalation	0.914 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
PROC7	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.61 mg/m3	0.6093
			Long term dermal	0.09 mg/kg bw/day	0.1504
			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	< 0.0001
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
PROC10	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.119 mg/m3	0.119
			Long term dermal	0.054 mg/kg bw/day	0.096
PROC13	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.121 mg/m3	0.121
			Long term dermal	0.054 mg/kg bw/day	0.054
PROC14	ECETOC TRA	Covers percentage substance in the product up to 2%.	Long term inhalation	0.609 mg/m3	0.609
			Long term dermal	0.068 mg/kg bw/day	0.12

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)

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

1. Short title of Exposure Scenario: 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	:	**PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)** **PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities** **PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities** **PROC10: Roller application or brushing** **PROC11: Non industrial spraying** **PROC13: Treatment of articles by dipping and pouring** **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**

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

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 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 domestic wastewater treatment, a total wastewater removal efficiency of (%) : > 37.4 %

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

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 in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.
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 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 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 %)

2.3 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
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration : < 15 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

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

Activity : Bulk transfers, Dedicated facility
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration : < 60 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

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 %)

2.5 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 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 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): 80 %)

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 %)

2.6 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
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 : 15 - 60 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

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

Activity : Bulk transfers, Dedicated facility

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 : 15 - 60 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

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 %)

2.8 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 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 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.

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 %)

2.9 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 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): 80 %)

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 %)

2.10 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 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 %)

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)

Activity	:	**Mixing operations (open systems)**
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		
Outdoor / Indoor	:	**Indoor**

Technical conditions and measures
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

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 %)

2.12 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**
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
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 %)

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

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
Outdoor / Indoor : Indoor

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

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

Activity : Spraying, Manual
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 : 60 - 240 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
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

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

2.16 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 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
Outdoor / Indoor : Indoor

Technical conditions and measures
Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

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

2.17 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 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
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 : Covers percentage substance in the product up to 2%.
Physical Form (at time of use) : solid

Frequency and duration of use
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.

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

Activity : Operation and lubrication of high energy open equipment
Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.
Physical Form (at time of use) : solid

Frequency and duration of use
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.

2.20 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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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	:	**Material transfers**
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 affecting 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 suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

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

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	:	**< 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.

2.23 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

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 : 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 suitable gloves tested to EN374. (Effectiveness (of a measure): 80 %)

2.24 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 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 affecting 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 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 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.

2.26 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 affecting 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 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) : solid

Frequency and duration of use
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.

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

Activity : Operation and lubrication of high energy open equipment
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) : solid

Frequency and duration of use
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.

3. Exposure estimation and reference to its source

Environment

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

			Long term dermal	0.0411 mg/kg bw/day	0.0722
			Short term inhalation	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/day	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 inhalation	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 inhalation	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

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/day**	**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/day**	**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**

PROC21	**ECETOC TRA**	**Covers percentage substance in the 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 percentage substance in the 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

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

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 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	:	**220**
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**

2.2 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 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 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.

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 %)

2.3 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 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 %)

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	**:**	**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**
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): 90 %)

2.5 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 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 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 %)

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**
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 affecting 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 'basic' employee training. (Effectiveness (of a measure): 80 %)

2.7 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 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 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	Compartment	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

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

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 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 year	:	**220**
Emission or Release Factor: Air	:	**0 %**
Emission or Release Factor: Water	:	**1 %**
Emission or Release Factor: Soil	:	**0.5 %**
Remarks	:	**No waste water is released to the environment**

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

Activity	:	**Mixing and loading**

Product characteristics

Concentration of the Substance in Mixture/Article	**:**	**Covers the percentage of the substance in the product up to 25 %.**
Physical Form (at time of use)	**:**	**liquid**

Amount used

Amount used per event	**:**	**20 gram**
Remarks	**:**	**Inhalation**
Amount used	**:**	**0.05 gram**
Remarks	**:**	**Dermal**

Frequency and duration of use

Application duration	**:**	**5 min**
Exposure duration	**:**	**5 min**
Frequency of use	**:**	**3 days/year**
Remarks	**:**	**Inhalation, Dermal**

Human factors not influenced by risk management

Dermal exposure	**:**	**2 cm2**

Other given operational conditions affecting consumers exposure

Outdoor / Indoor	**:**	**Indoor, Outdoor**
Room size	**:**	**1 m3**
Ventilation rate per hour	**:**	**0.6**

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

Consumer Measures	**:**	**Avoid using at a product concentration greater than 25%**

2.3 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

Activity	**:**	**Application**

Product characteristics

Concentration of the Substance in Mixture/Article	**:**	**Covers the percentage of the substance in the product up to 5%.**
Physical Form (at time of use)	**:**	**liquid**

Amount used

Amount used per event	**:**	**20 gram**
Remarks	**:**	**Inhalation**
Amount used	**:**	**0.1 gram**
Remarks	**:**	**Dermal**

Frequency and duration of use

Application duration	**:**	**30 min**
Exposure duration	**:**	**90 min**
Frequency of use	**:**	**3 days/year**
Remarks	**:**	**Inhalation, Dermal**

Human factors not influenced by risk management

Dermal exposure	**:**	**43 cm2**

Other given operational conditions affecting consumers exposure

Outdoor / Indoor : Indoor, Outdoor
Room size : 20 m3
Ventilation rate per hour : 0.6

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)
Consumer Measures : Avoid using at a product concentration greater than 5%

2.4 Contributing scenario controlling consumer exposure for: PC9b: Fillers, putties, plasters, modelling clay

Activity : Mixing and loading
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use) : liquid

Amount used
Amount used per event : 200 gram
Remarks : Inhalation
Amount used : 0.02 gram
Remarks : Dermal

Frequency and duration of use
Application duration : 5 min
Exposure duration : 5 min
Frequency of use : 2 days/year
Remarks : Inhalation, Dermal

Human factors not influenced by risk management
Dermal exposure : 2 cm2

Other given operational conditions affecting consumers exposure
Outdoor / Indoor : Indoor, Outdoor
Room size : 1 m3
Ventilation rate per hour : 0.6

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)
Consumer Measures : Avoid using at a product concentration greater than 25%

2.5 Contributing scenario controlling consumer exposure for: PC9b: Fillers, putties, plasters, modelling clay

Activity : Application
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : liquid

Amount used
- **Amount used per event : 200 gram**
- **Remarks : Inhalation**
- **Amount used : 1 gram**
- **Remarks : Dermal**

Frequency and duration of use
- **Application duration : 30 min**
- **Exposure duration : 90 min**
- **Frequency of use : 2 days/year**
- **Remarks : Inhalation, Dermal**

Human factors not influenced by risk management
- **Dermal exposure : 22 cm2**

Other given operational conditions affecting consumers exposure
- **Outdoor / Indoor : Indoor, Outdoor**
- **Room size : 20 m3**
- **Ventilation rate per hour : 0.6**

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)
- **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	Compartment	Value	Level of Exposure	RCR
ERC8a	EUSES		Fresh water		0.0032 mg/L	0.017
			Fresh water sediment		1.6 mg/kg dry weight	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 Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR

PC1	**"Consexpo"**	**Mixing and loading**	**Long term 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