

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

DIETHYLENETRIAMINE (DETA)

Version 1

Revision Date 30.04.2019

Print Date 06.11.2019

GB / EN

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

1.1 Product identifier

Trade name : DIETHYLENETRIAMINE (DETA)

Substance name : Diethylenetriamine

REACH Registration Number : 01-2119473793-27-0005

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 : Nouryon
Functional Chemicals AB
SE 444 85 Stenungsund
Sweden

Telephone : +4630385000

Telefax : +46303770551

E-mail address : QTS@nouryon.com

1.4 Emergency telephone number

Emergency telephone number : 24 hours emergency response number: +31 57 06 79211
Kemiakuten-SE: 020 99 60 00

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, 4, H302

Acute toxicity, 2, H330

Acute toxicity, 4, H312

Skin corrosion, 1B, H314

Serious eye damage, 1, H318

Skin sensitisation, 1B, H317

Specific target organ toxicity - single exposure, 3, Respiratory system, H335

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

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Pictogram	:	
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. H330 Fatal if inhaled. H335 May cause respiratory irritation.
Precautionary statements	:	Prevention: P260 Do not breathe mist, vapours or spray. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. Response: P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P310 Immediately call a POISON CENTER/doctor. Storage: P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Hazardous components which must be listed on the label:

Diethylenetriamine 111-40-0

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.

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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Pure substance/mixture : Substance
CAS-No. : 111-40-0

Hazardous substance

Chemical name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
Diethylenetriamine		111-40-0 203-865-4 01-2119473793-27	Acute Tox. 4; H302 Acute Tox. 2; H330 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317 STOT SE 3; H335	>= 90 - <= 100

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

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

Status : 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.
Symptoms of poisoning may appear several hours later.
- If inhaled : If breathed in, move person into fresh air.
Call a physician or poison control centre immediately.
Remove to fresh air.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
- 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.

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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 : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Risks : Harmful if swallowed or in contact with skin.
May cause an allergic skin reaction.
Causes serious eye damage.
Fatal if inhaled.
May cause respiratory irritation.
Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : 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 (NO_x)

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.

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Wear respiratory protection.
Ensure adequate ventilation.

Emergency measures on accidental release : Evacuate personnel to safe areas.
Only qualified personnel equipped with suitable protective equipment may intervene.
Prevent unauthorised persons entering the zone.

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 : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

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

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling : 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.

: For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Avoid formation of aerosol.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Prevent unauthorized access.
Keep in a 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.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Diethylenetriamine	111-40-0	TWA	1 ppm 4.3 mg/m ³	2005-04-06	GB EH40	
	Further information	:	Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity. 2: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			

ACGIH: American Conference of Governmental Industrial Hygienists
 AGW: Arbeitsplatzgrenzwert
 BEI: Biological Exposure Index
 MAC: Maximum Allowable Concentration
 NIOSH: National Institute for Occupational Safety and Health
 OEL: OEL: Occupational exposure limit.
 STEL: Short term exposure limit
 TRGS: Technische Regel für Gefahrstoffe
 TWA: Time Weighted Average

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Diethylenetriamine	Workers	Inhalation	Long-term systemic effects	15.4 mg/m ³
	Workers	Inhalation	Acute systemic effects	92.1 mg/m ³
	Workers	Inhalation	Long-term local effects	0.87 mg/m ³
	Workers	Inhalation	Acute local effects	2.6 mg/m ³
	Workers	Skin contact	Long-term systemic effects	11.4 mg/kg bw /day
	Workers	Skin contact	Long-term local effects	1.1 mg/cm ²
	Consumers	Inhalation	Long-term systemic effects	4.6 mg/m ³
	Consumers	Inhalation	Acute systemic effects	27.5 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	4.88 mg/kg bw /day
	Consumers	Skin contact	Acute systemic effects	4.88 mg/kg bw /day

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

Substance name	Environmental Compartment	Value
Diethylenetriamine	Fresh water	0.56 mg/l
	Marine water	0.056 mg/l
	Intermittent water	0.32 mg/l
	Sewage treatment plant	6 mg/l

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	Fresh water sediment	1072 mg/kg dry weight
	Marine sediment	107.2 mg/kg dry weight
	Soil	7.97 mg/kg dry weight

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 or aerosol formation use a respirator with an approved filter.
Wear full face mask supplied with:
Gas cartridge K (ammonia, green).

Hand protection : butyl-rubber
Break through time: > 30 min
Glove thickness: \geq 0.2 mm
Wearing time
< 30 minutes

butyl-rubber
Break through time: > 240 min
Glove thickness: \geq 0.6 mm
Wearing time
< 240 minutes

butyl-rubber
Break through time: > 480 min
Glove thickness: \geq 0.8 mm
Wearing time
< 480 minutes

The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove.

Eye protection : Safety glasses with side-shields conforming to EN166

Skin and body protection : Protective suit

Hygiene measures : Avoid contact with skin, eyes and clothing.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.
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.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form	: Clear liquid
Colour	: colourless
Odour	: ammoniacal
Odour Threshold	: No data available

Safety data

pH	: 12 at 20 °C
Melting point/range	: -39 °C at 1,013 hPa
Boiling point/boiling range	: 207 °C at 1,013 hPa
Flash point	: 96.7 °C at 1,013 hPa Method: Pensky-Martens closed cup
Evaporation rate	: No data available
Flammability (solid, gas)	: Not applicable
Flammability (liquids)	: Not classified as a flammability hazard
Lower explosion limit	: 1 %(V)
Upper explosion limit	: 10 %(V)
Vapour pressure	: 0.2 hPa at 20 °C
Relative vapour density	: 3.6
Density	: 957 kg/m ³ at 20 °C
Relative density	: 0.959 at 20 °C
Water solubility	: soluble
Solubility in other solvents	: Soluble in alcohols and hydrocarbons.
Partition coefficient: n-octanol/water	: log Pow: -1.58 at 20 °C
Auto-ignition temperature	: 358 °C at 1,013 hPa

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Decomposition temperature	: No data available
Viscosity, dynamic	: 5.05 mPa.s at 20 °C
Viscosity, kinematic	: No data available
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 (NO_x)

Thermal decomposition : No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Product information:

Acute toxicity	: Harmful if swallowed or in contact with skin. Fatal if inhaled.
Skin corrosion/irritation	: Causes severe burns.
Serious eye damage/eye irritation	: Causes serious eye damage.
Respiratory or skin	: Respiratory sensitisation: Not classified based on available

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sensitisation	information. Skin sensitisation: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified based on available information.
Carcinogenicity	: Not classified based on available information.
Reproductive toxicity	: Not classified based on available information.
STOT - single exposure	: May cause respiratory irritation.
STOT - repeated exposure	: Not classified based on available information.
Aspiration hazard	: Not classified based on available information.
Further information	: No further data available.

Toxicology data for the components:

Diethylenetriamine

Acute toxicity:

Acute oral toxicity	: LD50: > 300 - 2,000 mg/kg Species: Rat
Acute inhalation toxicity	: LC50 (Rat): > 0.07 - 0.3 mg/l Exposure time: 4 h Test atmosphere: dust/mist dust/mist
Acute dermal toxicity	: LD50: > 1,000 - 2,000 mg/kg Species: Rabbit
Skin corrosion/irritation	: Result: Causes burns.
Serious eye damage/eye irritation	: Result: Risk of serious damage to eyes.
Respiratory or skin sensitisation	: Result: The product is a skin sensitiser, sub-category 1B. Method: OECD Test Guideline 429
Germ cell mutagenicity	
Genotoxicity in vitro	: Ames test Result: negative
Genotoxicity in vivo	: Result: No evidence of genotoxic effects in vivo.
Carcinogenicity	: Not classified due to data which are conclusive although insufficient for classification.
Reproductive toxicity	: Not classified due to data which are conclusive although insufficient for classification.
STOT - single exposure	: Exposure routes: Inhalation Target Organs: Respiratory system

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May cause respiratory irritation.

STOT - repeated exposure : Not classified due to data which are conclusive although insufficient for classification.

Aspiration hazard : Not classified due to data which are conclusive although insufficient for classification.

SECTION 12: ECOLOGICAL INFORMATION

Product information: Ecotoxicology Assessment

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

12.1 Toxicity

Components:

Test result

Diethylenetriamine

Toxicity to fish : LC50: > 100 mg/l
Exposure time: 96 h
Species: *Poecilia reticulata* (guppy)

Toxicity to daphnia and other aquatic invertebrates : EC50: > 10 - 100 mg/l
Exposure time: 48 h
Species: *Daphnia magna* (Water flea)

Toxicity to algae : EC50: > 100 mg/l
Exposure time: 72 h
Species: *Pseudokirchneriella subcapitata* (green algae)

12.2 Persistence and degradability

Product information:

Biodegradability : Result: Readily biodegradable.

Components:

Diethylenetriamine

Biodegradability : Result: Readily biodegradable.

12.3 Bioaccumulative potential

Product information:

Bioaccumulation : Bioaccumulation is unlikely.

Components:

Diethylenetriamine

Bioaccumulation : Not expected considering the low log Pow value.

12.4 Mobility in soil

Product information:

Mobility : Due to its physical and chemical properties, transport between environmental compartments is not expected

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Components:

Diethylenetriamine

Mobility : The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected.

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:

Diethylenetriamine

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

Product information:

Biochemical Oxygen Demand (BOD) : No data available

Components:

Diethylenetriamine

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 2079
RID : UN 2079
IMDG-Code : UN 2079
IATA-DGR : UN 2079

14.2 Proper shipping name

ADR : DIETHYLENETRIAMINE
RID : DIETHYLENETRIAMINE

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IMDG-Code : DIETHYLENETRIAMINE

IATA-DGR : Diethylenetriamine

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.

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SECTION 15: REGULATORY INFORMATION

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

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

		Quantity 1	Quantity 2
H2	ACUTE TOXIC	50 t	200 t

Notification status

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
TCSI : YES. On the inventory, or in compliance with the inventory
TSCA : YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.

For explanation of abbreviation see section 16.

15.2 Chemical safety assessment

Diethylenetriamine : 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.
H318 : Causes serious eye damage.
H330 : Fatal if inhaled.
H335 : May cause respiratory irritation.

Full text of other abbreviations

GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with

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x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

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

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Annex :

Use as an intermediate

Formulation & (re)packing of substances and mixtures

Industrial use, Production of rigid foam, Epoxy, Polyurethane Curing Agent

Professional use, Production of rigid foam, Epoxy, Polyurethane Curing Agent

Epoxy curing agent

Epoxy curing agent

Industrial use as a Processing aid

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1. Short title of Exposure Scenario: Use as an intermediate

Main User Groups : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental Release Categories : ERC6a: Use of intermediate

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
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
PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC6a: Use of intermediate

Amount used

Regional use tonnage : 43000 ton(s)/year
(tonnes/year):
Fraction of EU tonnage used in : 100 %
region:
Fraction of Regional tonnage used : 10 %
locally:
Maximum daily site tonnage : 14333 kg/day
(kg/day):
(Msafe) : 15,640 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 : 300
Emission or Release Factor: Air : 0.002 %
Emission or Release Factor: Water : 1 %
Emission or Release Factor: Soil : 0.1 %
Remarks : spERC: ESVOC SpERC 2.2.v1

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

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Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures, Continuous process, With sample collection, 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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at

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ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures, Use in contained batch processes, With sample collection

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 : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures, Batch process, With sample collection, 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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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 : Equipment cleaning and maintenance

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 : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

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 : Equipment cleaning and maintenance

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 : <= 240 days/year

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better.

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 : 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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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: 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

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Use suitable eye protection and gloves.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6a	ECETOC TRA		Fresh water		0.513 mg/L	0.916
			Fresh water sediment		982.6 mg/kg dry weight	0.916
			Marine water		0.051 mg/L	0.916
			Marine sediment		98.23 mg/kg dry weight	0.916
			Sewage treatment plant		5.262 mg/L	0.877
			Soil		37.5 mg/kg dry weight	0.533

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.04 mg/m ³	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	4.3 mg/m ³	0.28
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	12.9 mg/m ³	0.84
			Long term dermal	0.34 mg/kg bw/day	0.03

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PROC4	ECETOC TRA		Long term inhalation	2.15 mg/m ³	0.14
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC8a	ECETOC TRA		Long term inhalation	6.02 mg/m ³	0.39
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8a	ECETOC TRA		Long term inhalation	4.3 mg/m ³	0.28
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8b	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC15	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	0.34 mg/kg bw/day	0.03

ERC6a: Use of intermediate

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

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

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1. Short title of Exposure Scenario: Formulation & (re)packing of substances and mixtures

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):	: 43000 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 15 %
Maximum daily site tonnage (kg/day):	: 30000 kg/day
Daily amount per site (Msafe)	: 7,987.9 t 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	: 0.6 %
Emission or Release Factor: Water	: 0 %
Emission or Release Factor: Soil	: 0 %
Remarks	: SpERC: FEICA 2

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Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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

Activity : Mixing operations, Continuous process, no sampling, 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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations, Continuous process, With sample collection

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 : <= 240 days/year

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations, Use in contained batch processes, With sample collection

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 : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations (open systems), Batch process, With sample collection

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

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

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
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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 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

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Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Activity : Aerosol

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
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Activity : Equipment cleaning and maintenance

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 : <= 240 days/year

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

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

Activity : Equipment cleaning and maintenance

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 : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better.

2.11 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 the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : liquid

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Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

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

Activity : Drum and small package filling, 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 : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

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

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Activity : Drum and small package filling, Dedicated facility, 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 : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Ensure material transfers are under containment or extract ventilation.

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

Use suitable eye protection and gloves.

2.14 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 : < 240 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Use suitable eye protection and gloves.

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3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	ECETOC TRA		Fresh water		0.0017 mg/L	0.0029
			Fresh water sediment		3.2 mg/kg dry weight	0.0029
			Marine water		0.0002 mg/L	0.0029
			Marine sediment		0.314 mg/kg dry weight	0.0029
			Sewage treatment plant		0 mg/L	0
			Soil		0.269 mg/kg dry weight	0.0037

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.04 mg/m3	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	12.9 mg/m3	0.84
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC4	ECETOC TRA	Mixing operations (open systems), Batch process, With sample collection	Long term inhalation	2.15 mg/m3	0.14
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC4	ECETOC TRA	Aerosol	Long term inhalation	0.5 mg/m3	0.57
PROC5	ECETOC TRA	Mixing operations (open systems)	Long term inhalation	2.15 mg/m3	0.14
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC5	ECETOC TRA	Aerosol	Long term inhalation	0.5 mg/m3	0.57
PROC8a	ECETOC TRA		Long term inhalation	6.02 mg/m3	0.39
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8a	ECETOC TRA		Long term	4.3 mg/m3	0.28

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			inhalation		
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8b	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Drum and small package filling, Dedicated facility	Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC9	ECETOC TRA	Drum and small package filling, Dedicated facility, Open systems	Long term inhalation	2.15 mg/m ³	0.14
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC15	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	0.34 mg/kg bw/day	0.03

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

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1. Short title of Exposure Scenario: Industrial use, Production of rigid foam, Epoxy, Polyurethane Curing Agent

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	: ERC6c, ERC6d: Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
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) 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 PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC6c, ERC6d: Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Amount used

Regional use tonnage (tonnes/year):	: 10700 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 1.6 %
Maximum daily site tonnage (kg/day):	: 800 kg/day
(Msafe)	: 214,560 kg/day

Environment factors not influenced by risk management

Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100

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Other given operational conditions affecting environmental exposure

Number of emission days per year : 220
Emission or Release Factor: Air : 1.7 %
Emission or Release Factor: Water : 0 %
Emission or Release Factor: Soil : 0 %
Remarks : SpERC: FEICA 7

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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

Activity : General exposures (closed systems), Storage, Closed systems

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), With sample collection, Film formation - air drying, Closed systems

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.

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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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), Machines, Manual, Batch process, Preparation of material for application, Closed systems, Article formation in mould

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations (open systems), Preparation of material for

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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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Use suitable eye protection and gloves.

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

Activity : Machines, Manual, Film formation - air drying, Closed systems, Open systems, Article formation in mould, Foaming

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

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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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Use suitable eye protection and gloves.

2.8 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), Preparation of material for 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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Activity : Aerosol

Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

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Mixture/Article : 5%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

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

Activity : Manual, Preparation of material for application

Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to
Mixture/Article : 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

Product characteristics

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

Frequency and duration of use

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Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

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

Use suitable eye protection and gloves.

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, Equipment cleaning and maintenance,
Non-dedicated facility

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

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, Drum/batch transfers, Transfer
from/pouring from containers, Dedicated facility

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

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Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

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 the percentage of the substance in the product up to 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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

Activity : Dipping, immersion and pouring

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal

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Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

2.16 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 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6c	ECETOC TRA		Fresh water		0.0017 mg/L	0.0029
			Fresh water sediment		3.19 mg/kg dry weight	0.0029
			Marine water		0.0002 mg/L	0.0029
			Marine		0.315 mg/kg	0.0029

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			sediment		dry weight	
			Sewage treatment plant		0 mg/L	0
			Soil		0.264 mg/kg dry weight	0.0037

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.01 mg/m3	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	0.86 mg/m3	0.06
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	2.58 mg/m3	0.17
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC4	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	2.58 mg/m3	0.17
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC4	ECETOC TRA	Machines, Manual, Film formation - air drying, Closed systems, Open systems, Article formation in mould, Foaming	Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC4	ECETOC TRA	Aerosol	Long term inhalation	0.6 mg/m3	0.69
PROC5	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	2.58 mg/m3	0.17
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC5	ECETOC TRA	Aerosol	Long term inhalation	0.6 mg/m3	0.69
PROC7	ECETOC TRA	Manual, Preparation of material for application	Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	2.14 mg/kg bw/day	0.19
PROC7	ECETOC TRA	Aerosol	Long term inhalation	0.2 mg/m3	0.23
PROC8a	ECETOC TRA		Long term inhalation	8.6 mg/m3	0.56
			Long term dermal	2.74 mg/kg bw/day	0.24

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PROC8b	ECETOC TRA		Long term inhalation	4.3 mg/m ³	0.28
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC10	ECETOC TRA		Long term inhalation	8.6 mg/m ³	0.56
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC13	ECETOC TRA		Long term inhalation	8.6 mg/m ³	0.56
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC15	ECETOC TRA		Long term inhalation	4.3 mg/m ³	0.28
			Long term dermal	0.34 mg/kg bw/day	0.03

ERC6c: Industrial use of monomers for manufacture of thermoplastics

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

PROC1: Use in closed process, no likelihood of exposure

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

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)

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

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

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1. Short title of Exposure Scenario: Professional use, Production of rigid foam, Epoxy, Polyurethane Curing Agent

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental Release Categories	: ERC8c, ERC8f: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
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 PROC10: Roller application or brushing PROC11: Non-industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Manual activities involving hand contact

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Amount used

Regional use tonnage (tonnes/year):	: 10700 ton(s)/year
Fraction of EU tonnage used in region:	: 10 %
Fraction of Regional tonnage used locally:	: 0.2 %
Maximum daily site tonnage (kg/day):	: 5.8 kg/day
(Msafe)	: 1,730 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

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Number of emission days per year : 365
Emission or Release Factor: Air : 0 %
Emission or Release Factor: Water : 1.5 %
Emission or Release Factor: Soil : 0 %
Remarks : SpERC: FEICA 10

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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

Activity : General exposures (closed systems), Storage, Closed systems

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), With sample collection

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

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Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), Preparation of material for 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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations (open systems), Preparation of material for application

Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

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Mixture/Article : 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Use suitable eye protection and gloves.

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

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Activity : Film formation - air drying

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Activity : Mixing operations (open systems), Preparation of material for 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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

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

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2.9 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 : Aerosol

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

Frequency and duration of use

Exposure duration : > 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

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

2.10 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, Drum/batch transfers, Transfer from/pouring from containers, Non-dedicated facility

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

Frequency and duration of use

Exposure duration : < 240 min

Remarks : Inhalation, Dermal

Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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

Activity : Equipment cleaning and maintenance

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

2.12 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, Drum/batch transfers, Transfer from/pouring from containers, Dedicated facility

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

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Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

2.13 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 the percentage of the substance in the product up to 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

2.14 Contributing scenario controlling worker exposure for: PROC11: Non-industrial spraying

Activity : Spraying, Manual

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

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

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Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

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

Activity : Aerosol

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

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

Activity : Manual, Foaming

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

Frequency and duration of use

Exposure duration : > 240 min

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Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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: 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 5%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

2.18 Contributing scenario controlling worker exposure for: PROC19: Manual activities involving hand contact

Activity : Mixing operations (open systems), Preparation of material for 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

Frequency and duration of use

Exposure duration : > 240 min

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Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

2.19 Contributing scenario controlling worker exposure for: PROC19: Manual activities involving hand contact

Activity : Aerosol

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment	Specific conditions	Compartment	Value	Level of Exposure	RCR
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	Method				
ERC8c	ECETOC TRA		Fresh water	0.0019 mg/L	0.0035
			Fresh water sediment	3.78 mg/kg dry weight	0.0035
			Marine water	0.0002 mg/L	0.0035
			Marine sediment	0.375 mg/kg dry weight	0.0035
			Sewage treatment plant	0.0032 mg/L	0.0005
			Soil	0.024 mg/kg dry weight	0.0003

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.01 mg/m3	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	2.58 mg/m3	0.17
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC4	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	6.02 mg/m3	0.39
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC4	ECETOC TRA	Aerosol	Long term inhalation	0.7 mg/m3	0.8
PROC4	ECETOC TRA	Film formation - air drying	Long term inhalation	8.6 mg/m3	0.56
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC5	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	6.02 mg/m3	0.39
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC5	ECETOC TRA	Aerosol	Long term inhalation	0.7 mg/m3	0.8
PROC8a	ECETOC TRA	Material transfers, Drum/batch transfers, Transfer from/pouring from containers, Non-dedicated facility	Long term inhalation	12.9 mg/m3	0.84
			Long term dermal	1.37 mg/kg bw/day	0.12

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PROC8a	ECETOC TRA	Equipment cleaning and maintenance	Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8b	ECETOC TRA		Long term inhalation	8.6 mg/m ³	0.56
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC10	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC11	ECETOC TRA	Spraying, Manual	Long term inhalation	6.02 mg/m ³	0.39
			Long term dermal	5.36 mg/kg bw/day	0.47
PROC11	ECETOC TRA	Aerosol	Long term inhalation	0.28 mg/m ³	0.32
PROC13	ECETOC TRA		Long term inhalation	8.6 mg/m ³	0.56
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC15	ECETOC TRA		Long term inhalation	4.3 mg/m ³	0.28
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC19	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	3.01 mg/m ³	0.2
			Long term dermal	7.07 mg/kg bw/day	0.62
PROC19	ECETOC TRA	Aerosol	Long term inhalation	0.14 mg/m ³	0.16

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

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

PROC1: Use in closed process, no likelihood of exposure

PROC10: Roller application or brushing

PROC11: Non-industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC19: Manual activities involving hand contact

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

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

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

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1. Short title of Exposure Scenario: Epoxy curing agent

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	: ERC6c, ERC6d: Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
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) 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 PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC6c, ERC6d: Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Amount used

Regional use tonnage (tonnes/year):	: 10700 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 1.6 %
Maximum daily site tonnage (kg/day):	: 800 kg/day
(Msafe)	: 214,560 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

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Number of emission days per year : 220
Emission or Release Factor: Air : 1.7 %
Emission or Release Factor: Water : 0 %
Emission or Release Factor: Soil : 0 %
Remarks : SpERC: FEICA 7

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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

Activity : General exposures (closed systems), Bulk product storage, Closed systems

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), With sample collection, Injection moulding of articles, Film formation - air drying, Closed systems

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.

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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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), Preparation of material for application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations (open systems), Preparation of material for application

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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

Activity : Film formation - air drying, Open systems

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.

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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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

2.9 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 : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

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Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently)., Provide extraction ventilation at points where emissions occur.

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

Use suitable eye protection and gloves.

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

Activity : Manual, Spraying (automatic/robotic)

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min

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Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

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

Use suitable eye protection and gloves.

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, Drum/batch transfers, Transfer from/pouring from containers, Equipment cleaning and maintenance, Non-dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

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

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, Drum/batch transfers, Transfer from/pouring from containers, Dedicated facility

Product characteristics

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Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

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 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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

Activity : Dipping, immersion and pouring

Product characteristics

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Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

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

Activity : Laboratory activities

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Use suitable eye protection and gloves.

3. Exposure estimation and reference to its source

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC6c	ECETOC TRA		Fresh water		0.0017 mg/L	0.0029
			Fresh water sediment		3.19 mg/kg dry weight	0.0029
			Marine water		0.0002 mg/L	0.0029
			Marine sediment		0.31 mg/kg dry weight	0.0029
			Sewage treatment plant		0 mg/L	0
			Soil		0.264 mg/kg dry weight	0.0037

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.02 mg/m3	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	2.15 mg/m3	0.14
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	6.45 mg/m3	0.42
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC4	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	1.07 mg/m3	0.07
			Long term dermal	0.69 mg/kg bw/day	0.06
PROC4	ECETOC TRA	Aerosol	Long term inhalation	0.25 mg/m3	0.29
PROC4	ECETOC TRA	Film formation - air drying, Open systems	Long term inhalation	10.75 mg/m3	0.7
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC5	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	1.07 mg/m3	0.07
			Long term dermal	0.07 mg/kg bw/day	0.01
PROC5	ECETOC TRA	Aerosol	Long term inhalation	0.25 mg/m3	0.29
PROC7	ECETOC TRA	Manual, Spraying (automatic/robotic)	Long term inhalation	10.75 mg/m3	0.7
			Long term dermal	2.14 mg/kg bw/day	0.19

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PROC7	ECETOC TRA	Aerosol	Long term inhalation	0.5 mg/m ³	0.57
PROC8a	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8b	ECETOC TRA		Long term inhalation	10.75 mg/m ³	0.7
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC10	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC13	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC15	ECETOC TRA		Long term inhalation	7.52 mg/m ³	0.49
			Long term dermal	0.34 mg/kg bw/day	0.03

ERC6c: Industrial use of monomers for manufacture of thermoplastics

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

PROC1: Use in closed process, no likelihood of exposure

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

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)

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

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

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1. Short title of Exposure Scenario: Epoxy curing agent

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental Release Categories	: ERC8c, ERC8f: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix
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 PROC10: Roller application or brushing PROC11: Non-industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Manual activities involving hand contact

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f: Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Amount used

Regional use tonnage (tonnes/year):	: 10700 ton(s)/year
Fraction of EU tonnage used in region:	: 10 %
Fraction of Regional tonnage used locally:	: 0.2 %
Maximum daily site tonnage (kg/day):	: 5.8 kg/day
(Msafe)	: 1,730 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
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Emission or Release Factor: Air : 0 %
Emission or Release Factor: Water : 1.5 %
Emission or Release Factor: Soil : 0 %
Remarks : SpERC: FEICA 10

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release
Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 92.6 %

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

Activity : General exposures (closed systems), Storage, Closed systems

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), With sample collection

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

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

Activity : General exposures (closed systems), Preparation of material for application

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Ensure operation is undertaken outdoors.

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

Use suitable eye protection and gloves.

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

Activity : Mixing operations (open systems), Preparation of material for application

Product characteristics

Concentration of the Substance in : Covers percentage substance in the product up to 50%.

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Mixture/Article
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Use suitable eye protection and gloves.

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

Activity : Aerosol

Product characteristics

Concentration of the Substance in : Covers percentage substance in the product up to 50%.
Mixture/Article
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Use suitable eye protection and gloves.

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

Activity : Film formation - air drying, Open systems

Product characteristics

Concentration of the Substance in : Covers percentage substance in the product up to 50%.
Mixture/Article
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 240 min

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Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Activity : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

2.10 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, Drum/batch transfers, Transfer from/pouring from containers, Equipment cleaning and maintenance, Non-dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear suitable gloves tested to EN374., Wear a respirator conforming to EN140 with Type A filter or better.

2.11 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, Drum/batch transfers, Transfer from/pouring from containers, Dedicated facility

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 240 min

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Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

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

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 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

2.13 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 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min

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Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

2.14 Contributing scenario controlling worker exposure for: PROC11: Non-industrial spraying

Activity : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

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

Activity : Dipping, immersion and pouring

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

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

Activity : Laboratory activities

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

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

Use suitable eye protection and gloves.

2.17 Contributing scenario controlling worker exposure for: PROC19: Manual activities involving hand contact

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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 50%.
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

2.18 Contributing scenario controlling worker exposure for: PROC19: Manual activities involving hand contact

Activity : Aerosol

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation
Frequency of use : <= 240 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Outdoor / Indoor : Outdoor

Technical conditions and measures

Assumes a good basic standard of occupational hygiene is implemented, Assumes activities are at ambient temperature (unless stated differently).

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.,
Wear a respirator conforming to EN140 with Type A filter or better.

3. Exposure estimation and reference to its source

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Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8c	ECETOC TRA		Fresh water		0.002 mg/L	0.0035
			Fresh water sediment		3.678 mg/kg dry weight	0.0035
			Marine water		0.0002 mg/L	0.0035
			Marine sediment		0.374 mg/kg dry weight	0.0035
			Sewage treatment plant		0.0032 mg/L	0.0005
			Soil		0.024 mg/kg dry weight	0.0003

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term inhalation	0.02 mg/m3	0
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC2	ECETOC TRA		Long term inhalation	10.75 mg/m3	0.7
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC3	ECETOC TRA		Long term inhalation	4.51 mg/m3	0.29
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC4	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	6.86 mg/kg bw/day	0.6
PROC4	ECETOC TRA	Aerosol	Long term inhalation	0.5 mg/m3	0.57
PROC4	ECETOC TRA	Film formation - air drying, Open systems	Long term inhalation	12.9 mg/m3	0.84
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC5	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	4.3 mg/m3	0.28
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC5	ECETOC TRA	Aerosol	Long term inhalation	0.5 mg/m3	0.57
PROC8a	ECETOC TRA		Long term inhalation	5.37 mg/m3	0.35

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			Long term dermal	2.74 mg/kg bw/day	0.24
PROC8b	ECETOC TRA		Long term inhalation	12.9 mg/m ³	0.84
			Long term dermal	1.37 mg/kg bw/day	0.12
PROC10	ECETOC TRA		Long term inhalation	3.76 mg/m ³	0.24
			Long term dermal	5.49 mg/kg bw/day	0.48
PROC11	ECETOC TRA	Spraying, Manual	Long term inhalation	15.05 mg/m ³	0.98
			Long term dermal	0.11 mg/kg bw/day	0.01
PROC11	ECETOC TRA	Aerosol	Long term inhalation	0.7 mg/m ³	0.8
PROC13	ECETOC TRA		Long term inhalation	9.03 mg/m ³	0.59
			Long term dermal	2.74 mg/kg bw/day	0.24
PROC15	ECETOC TRA		Long term inhalation	10.75 mg/m ³	0.7
			Long term dermal	0.34 mg/kg bw/day	0.03
PROC19	ECETOC TRA	Mixing operations (open systems), Preparation of material for application	Long term inhalation	5.37 mg/m ³	0.35
			Long term dermal	7.07 mg/kg bw/day	0.62
PROC19	ECETOC TRA	Aerosol	Long term inhalation	0.25 mg/m ³	0.29

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

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

PROC1: Use in closed process, no likelihood of exposure

PROC10: Roller application or brushing

PROC11: Non-industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC19: Manual activities involving hand contact

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

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

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DIETHYLENETRIAMINE (DETA)

Version 1

Revision Date 30.04.2019

Print Date 06.11.2019

GB / EN

1. Short title of Exposure Scenario: Industrial use as a Processing aid

Main User Groups	:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	:	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
Process categories	:	PROC2: Use in closed, continuous process with occasional controlled exposure 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 PROC13: Treatment of articles by dipping and pouring

2.1 Contributing scenario controlling environmental exposure for: ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Amount used

Regional use tonnage (tonnes/year):	:	20 ton(s)/year
Fraction of EU tonnage used in region:	:	100 %
Fraction of Regional tonnage used locally:	:	10 %
Maximum daily site tonnage (kg/day):	:	157 kg/day
(Msafe)	:	157 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	:	20
Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	100 %
Emission or Release Factor: Soil	:	5 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m ³ /day
Percentage removed from waste water	:	92.6 %

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

Activity : General exposures (closed systems), With sample collection

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

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

Dermal exposure : Palms of both hands (480 cm²)

Breathing volume : 10 m³/ 8h shift

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

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 %)

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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

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

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

Dermal exposure : Palms of both hands (480 cm²)

Breathing volume : 10 m³/ 8h shift

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 3
Remarks : Use in large workrooms only.

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 %)
Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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

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

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

Dermal exposure : Both hands (960 cm²)
Breathing volume : 10 m³/ 8h shift

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

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 %)
Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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

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

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

Dermal exposure : Palms of both hands (480 cm²)
Breathing volume : 10 m³/ 8h shift

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

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 %)

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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

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

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

Dermal exposure : Palms of both hands (480 cm²)
Breathing volume : 10 m³/ 8h shift

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use
Ventilation rate per hour : 3

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Remarks : Use in large workrooms only.

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 %)

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	ECETOC TRA		Fresh water		0.36 mg/L	0.64
			Fresh water sediment		149 mg/kg wet weight	0.64
			Marine water		0.036 mg/L	0.64
			Marine sediment		14.9 mg/kg wet weight	0.64
			Sewage treatment plant		3.67 mg/L	0.61
			Soil		70 mg/kg wet weight	0.37

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC2	ECETOC TRA		Long term inhalation	0.086 mg/m3	0.001
			Long term dermal	0.013 mg/kg bw/day	0.005
PROC5	ECETOC TRA		Long term inhalation	0.429 mg/m3	0.028
			Long term dermal	0.006 mg/kg bw/day	0.0006
	ART	Aerosol	Chronic inhalation local exposure	0.0075 mg/m3	0.008
PROC8a	ECETOC TRA		Long term inhalation	0.858 mg/m3	0.056

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			Long term dermal	0.014 mg/kg bw/day	0.001
PROC8b	ECETOC TRA		Long term inhalation	0.129 mg/m3	0.0085
			Long term dermal	0.068 mg/kg bw/day	0.006
PROC13	ECETOC TRA		Long term inhalation	0.858 mg/m3	0.056
			Long term dermal	0.068 mg/kg bw/day	0.006
	ART	Aerosol	Chronic inhalation local exposure	0.31 mg/m3	0.36

ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

PROC13: Treatment of articles by dipping and pouring

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

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