

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

AMINOETHYLPIPERAZINE (AEP)

Version 3

Revision Date 13.06.2017

Print Date 27.07.2017

GB / EN

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

1.1 Product identifier

Trade name : AMINOETHYLPIPERAZINE (AEP)

Substance name : 2-piperazin-1-ylethylamine

Index-No. : 612-105-00-4

REACH Registration Number : 01-2119471486-30-0002

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

Use of the Substance/Mixture : Specific use(s): Refer to attached exposure scenario Annex.

1.3 Details of the supplier of the safety data sheet

Company : Akzo Nobel
Functional Chemicals AB
SE 444 85 Stenungsund
Sweden

Telephone : +4630385000

Telefax : +46303770551

E-mail address : CustomerService.Amin@akzonobel.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)

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Acute toxicity, 4, H302
Acute toxicity, 3, H311
Skin corrosion, 1B, H314
Serious eye damage, 1, H318
Skin sensitisation, 1, H317
Reproductive toxicity, 2, H361
Specific target organ toxicity - repeated exposure, 1, Respiratory Tract, H372
Chronic aquatic toxicity, 3, H412

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 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**
P201 Obtain special instructions before use.
P260 Do not breathe mist, vapours or spray.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.

Hazardous components which must be listed on the label:

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2-Piperazine-1-ylethylamine

140-31-8

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

CAS-No. : 140-31-8

Hazardous substance

Chemical name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
2-Piperazine-1-ylethylamine		140-31-8 205-411-0 01-2119471486-30	Acute Tox. 4; H302 Acute Tox. 3; H311 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1; H317 Repr. 2; H361 STOT RE 1; H372 Aquatic Chronic 3; H412	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.
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Take victim immediately to hospital.
- In case of eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

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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.
Toxic in contact with skin.
May cause an allergic skin reaction.
Causes serious eye damage.
Suspected of damaging fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure if inhaled.
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 (NOx)

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.

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SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Wear respiratory protection.
Ensure adequate ventilation.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up /
Methods for containment : 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

Additional advice : 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.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Prevent unauthorized access.
Keep container tightly closed in a dry and well-ventilated place.
Reacts with copper, aluminium, zinc and their alloys.

Other data : No decomposition if stored and applied as directed.

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7.3 Specific end use(s)

Specific use(s) : Refer to attached exposure scenario Annex.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

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

Substance name	End Use	Exposure routes	Potential health effects	Value
2-Piperazine-1-ylethylamine	Workers	Inhalation	Long-term systemic effects	10.6 mg/m ³
	Workers	Inhalation	Acute systemic effects	10.6 mg/m ³
	Workers	Inhalation	Long-term local effects	0.015 mg/m ³
	Workers	Inhalation	Acute local effects	80 mg/m ³

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

Substance name	Environmental Compartment	Value
2-Piperazine-1-ylethylamine	Fresh w ater	0.058 mg/l
	Marine w ater	0.0058 mg/l
	Intermittent w ater	0.58 mg/l
	Sew age treatment plant	250 mg/l
	Fresh w ater sediment	215 mg/kg dry w eight
	Marine sediment	21.5 mg/kg dry w eight
	Soil	1 mg/kg dry w eight

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

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

Skin and body protection : Protective suit

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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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

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

Safety data

pH : 12 at 1 % solution
Melting point/range : -19 °C
at 1,013 hPa
Boiling point/boiling range : 220.4 °C
at 1,013 hPa
Flash point : 99 °C
at 1,013 hPa
Method: ASTM D 93
Ignition temperature : > 300 °C
Evaporation rate : No data available
Flammability (solid, gas) : Not applicable
Flammability (liquids) : Not classified as a flammability hazard
Lower explosion limit : 1.1 %(V)
Upper explosion limit : 9.4 %(V)
Vapour pressure : 0.015 hPa at 20 °C

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Relative vapour density	: 4.5
Density	: 984 kg/m ³ at 20 °C
Relative density	: 0.980 at 20 °C
Water solubility	: completely miscible
Solubility in other solvents	: Miscible with ethanol.
Partition coefficient: n-octanol/water	: log Pow: -1.48 at 20 °C
Auto-ignition temperature	: > 300 °C
Decomposition temperature	: No data available
Viscosity, dynamic	: 14.1 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 : Nitrogen oxides (NO_x)

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products

Thermal decomposition : No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Product information:

Acute toxicity	:	Harmful if swallowed. Toxic in contact with skin.
Skin corrosion/irritation	:	Causes severe burns.
Serious eye damage/eye irritation	:	Causes serious eye damage.
Respiratory or skin sensitisation	:	Respiratory sensitisation: Not classified based on available 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	:	Suspected of damaging fertility or the unborn child.
STOT - single exposure	:	Not classified based on available information.
STOT - repeated exposure	:	Causes damage to organs (Respiratory Tract) through prolonged or repeated exposure if inhaled.
Aspiration hazard	:	Not classified based on available information.
Further information	:	Suspected of damaging fertility or the unborn child.

Toxicology data for the components:

2-Piperazine-1-ylethylamine

Acute toxicity:

Acute oral toxicity	:	LD50: > 2,000 - 5,000 mg/kg Species: Rat Literature data.
Acute dermal toxicity	:	LD50: > 200 - 1,000 mg/kg Species: Rabbit Literature data.
Skin corrosion/irritation	:	Result: Causes burns.
Serious eye damage/eye irritation	:	Result: Risk of serious damage to eyes.
Respiratory or skin sensitisation	:	Species: Guinea pig Result: May cause sensitisation by skin contact. Method: OECD Test Guideline 406

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Germ cell mutagenicity

- Genotoxicity in vitro : Ames test
Result: negative
Method: OECD Test Guideline 471
- Genotoxicity in vivo : Chromosome aberration test in vivo
Species: Mouse
Result:
No evidence of genotoxic effects in vivo.

- Carcinogenicity :
No data available

- CMR effects
Reproductive toxicity : Suspected human reproductive toxicant
- STOT - single exposure : Not classified due to data which are conclusive although insufficient for classification.

- STOT - repeated exposure : Exposure routes: Inhalation
Target Organs: Respiratory Tract
Causes damage to organs through prolonged or repeated exposure.

- 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 with long lasting effects.

12.1 Toxicity

Components:

Test result

2-Piperazine-1-ylethylamine

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

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Toxicity to bacteria : EC50: > 100 mg/kg dry weight (d.w.)
Exposure time: 28 d

12.2 Persistence and degradability

Product information:

Biodegradability : Result: Not readily biodegradable.

Components:

2-Piperazine-1-ylethylamine

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301D

12.3 Bioaccumulative potential

Product information:

Bioaccumulation : Not expected considering the low log Pow value.

Components:

2-Piperazine-1-ylethylamine

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

Components:

2-Piperazine-1-ylethylamine

Mobility : Due to its physical and chemical properties, transport between environmental compartments 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:

2-Piperazine-1-ylethylamine

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) : <60% BOD, 28 days, Closed Bottle Test (OECD 301D).

Components:

2-Piperazine-1-ylethylamine

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Biochemical Oxygen Demand (BOD) : <60% BOD, 28 days, Closed Bottle Test (OECD 301D).

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 2815
RID : UN 2815
IMDG-Code : UN 2815
IATA-DGR : UN 2815

14.2 Proper shipping name

ADR : N-AMINOETHYLPIPERAZINE
RID : N-AMINOETHYLPIPERAZINE
IMDG-Code : N-AMINOETHYLPIPERAZINE
IATA-DGR : N-Aminoethylpiperazine

14.3 Transport hazard class

ADR : 8 (6.1)
RID : 8 (6.1)
IMDG-Code : 8 (6.1)
IATA-DGR : 8 (6.1)

14.4 Packing group

ADR
Packing group : III
Classification Code : CT1
Hazard Identification Number : 86
Labels : 8 (6.1)
Tunnel restriction code : (E)

RID
Packing group : III
Classification Code : CT1
Hazard Identification Number : 86
Labels : 8 (6.1)

IMDG-Code
Packing group : III
Labels : 8 (6.1)
EmS Code : F-A, S-B

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IATA-DGR

Packing instruction (cargo aircraft) : 856
Packing instruction (passenger aircraft) : 852
Packing instruction (LQ) : Y841
Packing group : III
Labels : 8 (6.1)

14.5 Environmental hazards

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG-Code

Marine pollutant : no

IATA-DGR

Environmentally hazardous : no

14.6 Special precautions for user

Not applicable

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

Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

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

Major Accident Hazard Legislation : Seveso Directive
2012/18/EU
Not applicable

Water contaminating class (Germany) : WGK 2 water endangering

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.

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Further information

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

15.2 Chemical safety assessment

2-Piperazine-1-ylethylamine : 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.
H311	: Toxic in contact with skin.
H314	: Causes severe skin burns and eye damage.
H317	: May cause an allergic skin reaction.
H318	: Causes serious eye damage.
H361	: Suspected of damaging fertility or the unborn child.
H372	: Causes damage to organs through prolonged or repeated exposure if inhaled.
H412	: Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

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

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Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

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

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Annex :

Industrial formulation

Epoxy, Polyurethane Curing Agent, Industrial use

Epoxy, Polyurethane Curing Agent, Professional use

Use as an Intermediate/monomer

Gas sweetening

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1. Short title of Exposure Scenario: Industrial formulation

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	: ERC2: Formulation of preparations
Process categories	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) 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 PROC28: Manual maintenance (cleaning and repair) of machinery

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

Amount used

Regional use tonnage (tonnes/year):	: 5000 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 22727 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	: 0.36 %
Emission or Release Factor: Water	: 0 %
Emission or Release Factor: Soil	: 0 %
Remarks	: FEICA SPERC 2.1b.v1

Technical conditions and measures / Organizational measures

Exposure time	: Continuous use/release
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Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Sewage treatment plant, Soil
Air : Incinerate, absorb, or adsorb vapours stripped from solution whenever necessary. (Effectiveness (of a measure): 80 %)

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 0.03 %
Sludge Treatment : Do not apply industrial sludge to natural soils.

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

Activity : Product delivery/storage - product storage - indoor
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

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

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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 %)

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Use suitable eye protection.

2.6 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 100 % (unless stated differently).
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 1 - 4 h
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³
Outdoor / Indoor : Outdoor

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.

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

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 : 1 - 4 h
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³
Outdoor / Indoor : Outdoor

Technical conditions and measures

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

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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.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

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

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.

2.9 Contributing scenario controlling worker exposure for: PROC28: Manual maintenance (cleaning and repair) of machinery

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 : < 120 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

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Outdoor / Indoor : Indoor

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

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

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC2	EUSES		Fresh water		0.00204 mg/L	0.0352
			Fresh water sediment		0.00772 mg/kg dry weight	0.000036
			Marine water		0.00021 mg/L	0.0361
			Marine sediment		0.000792 mg/kg dry weight	0.000037
			Sewage treatment plant		0 mg/L	0
			Soil		0.00841 mg/kg dry weight	0.00841

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.000036 mg/m ³	0.002
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.0013 mg/m ³	0.086
PROC2	ECETOC TRA		Long term dermal	0.137 mg/kg bw/day	0.041
	ART		Long term	0.0027	0.18

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			inhalation	mg/m ³	
PROC3	ECETOC TRA		Long term dermal	0.069 mg/kg bw/day	0.021
	ART		Long term inhalation	0.0038 mg/m ³	0.253
PROC8b	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0034 mg/m ³	0.227
PROC9	ECETOC TRA		Long term dermal	0.686 mg/kg bw/day	0.206
	ART		Long term inhalation	0.01 mg/m ³	0.667
PROC15	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.00017 mg/m ³	0.011
PROC28	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0046 mg/m ³	0.307

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

PROC28: Manual maintenance (cleaning and repair) of machinery

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

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

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

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

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

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

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	: ERC5: Industrial 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) PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC15: Use as laboratory reagent PROC28: Manual maintenance (cleaning and repair) of machinery

2.1 Contributing scenario controlling environmental exposure for: ERC5: Industrial use resulting in inclusion into or onto a matrix

Amount used

Regional use tonnage (tonnes/year):	: 5000 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 22727 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	: 1.7 %
Emission or Release Factor: Water	: 0 %
Emission or Release Factor: Soil	: 0 %
Remarks	: FEICA SPERC 5.1a.v2

Technical conditions and measures / Organizational measures

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Percentage removed from waste water : 0.03 %

Sludge Treatment : Do not apply industrial sludge to natural soils.

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

Activity : Product delivery/storage - product storage - indoor

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Room size : > 1000 m3

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 %)

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Use suitable eye protection.

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

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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 20%.
Physical Form (at time of use) : liquid
Vapour pressure : 126 hPa
Process Temperature : 60 °C

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 3000 m³
Ventilation rate per hour : > 3

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 50 %)

Organisational measures to prevent /limit releases, dispersion and exposure

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Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

2.9 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 : 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 : 1 - 4 h
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³
Outdoor / Indoor : Outdoor

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.

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

Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 20% in Mixture/Article
Physical Form (at time of use) : liquid
Vapour pressure : 126 hPa
Process Temperature : 60 °C

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

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Outdoor / Indoor : Indoor
Room size : > 3000 m³
Ventilation rate per hour : > 3
Outdoor / Indoor : Outdoor

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 50 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

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

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.

2.13 Contributing scenario controlling worker exposure for: PROC28: Manual maintenance (cleaning and repair) of machinery

Product characteristics

Concentration of the Substance : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 120 min

Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)

Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC5	EUSES		Fresh water		0.00204 mg/L	0.0352
			Fresh water sediment		0.00772 mg/kg dry weight	0.000036
			Marine water		0.0201 mg/L	0.0361
			Marine sediment		0.000792 mg/kg dry weight	0.000037
			Sewage treatment plant		0 mg/L	0
			Soil		0.0353 mg/kg dry weight	0.0353

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.000036 mg/m ³	0.002

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PROC2	ECETOC TRA	Long term dermal	0.137 mg/kg bw/day	0.041
	ART	Long term inhalation	0.0027 mg/m ³	0.18
PROC3	ECETOC TRA	Long term dermal	0.069 mg/kg bw/day	0.021
	ART	Long term inhalation	0.0038 mg/m ³	0.253
PROC7	ECETOC TRA	Long term dermal	0.082 mg/kg bw/day	0.025
	ART	Long term inhalation	0.0049 mg/m ³	0.327
PROC8b	ECETOC TRA	Long term dermal	1.371 mg/kg bw/day	0.412
	ART	Long term inhalation	0.0034 mg/m ³	0.227
PROC10	ECETOC TRA	Long term dermal	0.082 mg/kg bw/day	0.025
	ART	Long term inhalation	0.0044 mg/m ³	0.293
PROC15	ECETOC TRA	Long term dermal	0.034 mg/kg bw/day	0.01
	ART	Long term inhalation	0.00017 mg/m ³	0.011
PROC28	ECETOC TRA	Long term dermal	1.371 mg/kg bw/day	0.412
	ART	Long term inhalation	0.0046 mg/m ³	0.307

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

PROC1: Use in closed process, no likelihood of exposure

PROC10: Roller application or brushing

PROC15: Use as laboratory reagent

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

PROC28: Manual maintenance (cleaning and repair) of machinery

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

PROC7: Industrial spraying

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: Epoxy, Polyurethane Curing Agent, Professional use

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 PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available PROC28: Manual maintenance (cleaning and repair) of machinery

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):	: 5000 ton(s)/year
Fraction of EU tonnage used in region:	: 10 %
Fraction of Regional tonnage used locally:	: 0.2 %

Environment factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 365
Emission or Release Factor: Air	: 0 %
Emission or Release Factor: Water	: 1.5 %
Emission or Release Factor: Soil	: 0 %
Remarks	: FEICA SPERC 8c.3.v3

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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, Sewage treatment plant, Soil

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 0.03 %
Sludge Treatment : Do not apply industrial sludge to natural soils.

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

Activity : Product delivery/storage - product storage - indoor
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

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

2.3 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 100 % (unless stated differently).
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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

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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.

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

Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 20%
in Mixture/Article
Physical Form (at time of use) : liquid
Vapour pressure : 126 hPa
Process Temperature : 60 °C

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 300 m³
Ventilation rate per hour : > 3

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 50 %)

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

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

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Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal
Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 20%
in Mixture/Article
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 1 - 4 h
Remarks : Inhalation, Dermal
Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Carry out in a vented booth provided with laminar airflow.

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

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measure): 90 %)

Use suitable eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 20%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 120 min

Remarks : Inhalation, Dermal

Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Spraying cabinet with capture of aerosols.

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 %)

Self-contained, positive pressure breathing apparatus (Effectiveness (of a measure): 97.5 %)

Use suitable eye protection.

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

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : < 60 min

Remarks : Inhalation, Dermal

Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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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.

2.9 Contributing scenario controlling worker exposure for: PROC28: Manual maintenance (cleaning and repair) of machinery

Product characteristics

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

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

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

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC8c	EUSES		Fresh water		0.0041 mg/L	0.0706
			Fresh water sediment		0.0155 mg/kg dry weight	0.000072
			Marine water		0.000415 mg/L	0.0716
			Marine sediment		0.00157 mg/kg dry weight	0.000073
			Sewage		0.0205 mg/L	0.000082

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			treatment plant			
			Soil		0.00122 mg/kg dry weight	0.00122

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.000036 mg/m ³	0.002
PROC5	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0077 mg/m ³	0.513
PROC6	ECETOC TRA		Long term dermal	1.646 mg/kg bw/day	0.494
	ART		Long term inhalation	0.0091 mg/m ³	0.607
PROC8a	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0068 mg/m ³	0.453
PROC10	ECETOC TRA		Long term dermal	1.646 mg/kg bw/day	0.494
	ART		Long term inhalation	0.0073 mg/m ³	0.487
PROC11	ECETOC TRA		Long term dermal	1.607 mg/kg bw/day	0.483
	ART		Long term inhalation	0.012 mg/m ³	0.817
PROC19	RISKOFDERM		Long term dermal	2.274 mg/kg bw/day	0.683
	ART		Long term inhalation	0.0076 mg/m ³	0.507
PROC28	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0076 mg/m ³	0.507

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
 PROC19: Hand-mixing with intimate contact and only PPE available
 PROC28: Manual maintenance (cleaning and repair) of machinery

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

PROC6: Calendering operations

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

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

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

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1. Short title of Exposure Scenario: Use as an Intermediate/monomer

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental Release Categories	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Process categories	: 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) PROC6: Calendering operations PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC28: Manual maintenance (cleaning and repair) of machinery

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

Amount used

Regional use tonnage (tonnes/year):	: 5000 ton(s)/year
Fraction of EU tonnage used in region:	: 100 %
Fraction of Regional tonnage used locally:	: 100 %
Maximum daily site tonnage (kg/day):	: 16667 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	: 2 %
Emission or Release Factor: Water	: 0 %
Emission or Release Factor: Soil	: 0 %
Remarks	: ESVOC SpERC 4.21a.v1

Technical conditions and measures / Organizational measures

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 0.03 %

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

Activity : Product delivery/storage - product storage - indoor
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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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

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

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

Frequency and duration of use
Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : > 1000 m³

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

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.1%

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min

Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Remarks : Elevated temperature

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

Use suitable eye protection.

2.7 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 100 % (unless stated differently).

Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : 1 - 4 h

Remarks : Inhalation, Dermal

Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Room size : > 1000 m³

Outdoor / Indoor : Outdoor

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.

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

Product characteristics

Concentration of the Substance : Covers percentage substance in the product up to 0.1%
in Mixture/Article
Physical Form (at time of use) : liquid

Frequency and duration of use

Exposure duration : > 240 min
Frequency of use : 220 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Use suitable eye protection.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : < 60 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

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

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.

2.10 Contributing scenario controlling worker exposure for: PROC28: Manual maintenance (cleaning and repair) of machinery

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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 : < 120 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR
ERC4	EUSES		Fresh water		0.00204 mg/L	0.0352
			Fresh water sediment		0.00772 mg/kg dry weight	0.000036
			Marine water		0.00021 mg/L	0.0361
			Marine sediment		0.00079 mg/kg dry weight	0.000037
			Sewage treatment plant		0 mg/L	0
			Soil		0.0413 mg/kg dry weight	0.0413

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term	0.034 mg/kg	0.01

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			dermal	bw/day	
	ART		Long term inhalation	0.00036 mg/m ³	0.002
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.0013 mg/m ³	0.086
PROC2	ECETOC TRA		Long term dermal	0.137 mg/kg bw/day	0.041
	ART		Long term inhalation	0.0027 mg/m ³	0.180
PROC3	ECETOC TRA		Long term dermal	0.069 mg/kg bw/day	0.021
	ART		Long term inhalation	0.0038 mg/m ³	0.253
PROC8b	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0034 mg/m ³	0.227
PROC15	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.00017 mg/m ³	0.011
PROC28	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0046 mg/m ³	0.307

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

PROC1: Use in closed process, no likelihood of exposure

PROC15: Use as laboratory reagent

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

PROC28: Manual maintenance (cleaning and repair) of machinery

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

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

A quantitative risk assessment is not required for human health.

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
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1. Short title of Exposure Scenario: Gas sweetening

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

Environmental Release Categories : ERC7: Industrial use of substances in closed systems

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)
PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities
PROC28: Manual maintenance (cleaning and repair) of machinery

2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems

Amount used

Regional use tonnage (tonnes/year) : 1000 ton(s)/year

Fraction of EU tonnage used in region:

Fraction of Regional tonnage used locally: : 1 %

Maximum daily site tonnage (kg/day): : 500 ton(s)/year

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 : 0.05 %

Emission or Release Factor: Water : 0.1 %

Emission or Release Factor: Soil : 0.1 %

Remarks : ESVOC SpERC 7.13a.v1

Technical conditions and measures / Organizational measures

Exposure time : Continuous use/release

Compartment : Fresh water, Fresh water sediment, Marine water, Marine sediment, Sewage treatment plant, Soil

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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 : 0.03 %
water

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

Activity : Product delivery/storage - product storage - indoor
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

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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

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

Activity : General exposures (closed systems)
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : liquid
Frequency and duration of use
Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : > 1000 m3

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

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

Product characteristics

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

Frequency and duration of use

Exposure duration : > 240 min
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m³

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.

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

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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 : 1 - 4 h
Remarks : Inhalation, Dermal
Frequency of use : 300 days/year

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : > 1000 m3
Outdoor / Indoor : Outdoor

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.

2.8 Contributing scenario controlling worker exposure for: PROC28: Manual maintenance (cleaning and repair) of machinery

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 : < 120 min
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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
ERC7	EUSES		Fresh water		0.027 mg/L	0.466
			Fresh water sediment		0.102 mg/kg dry weight	0.000475
			Marine water		0.00271 mg/L	0.467
			Marine sediment		0.0102 mg/kg dry weight	0.000476
			Sewage treatment plant		0.25 mg/L	0.001
			Soil		0.0014 mg/kg dry weight	0.0014

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.000036 mg/m ³	0.002
PROC1	ECETOC TRA		Long term dermal	0.034 mg/kg bw/day	0.01
	ART		Long term inhalation	0.0013 mg/m ³	0.086
PROC2	ECETOC TRA		Long term dermal	0.137 mg/kg bw/day	0.041
	ART		Long term inhalation	0.0027 mg/m ³	0.180
PROC3	ECETOC TRA		Long term dermal	0.069 mg/kg bw/day	0.021
	ART		Long term inhalation	0.0038 mg/m ³	0.253
PROC8b	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0034 mg/m ³	0.227
PROC28	ECETOC TRA		Long term dermal	1.371 mg/kg bw/day	0.412
	ART		Long term inhalation	0.0046 mg/m ³	0.307

ERC7: Industrial use of substances in closed systems

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PROC1: Use in closed process, no likelihood of exposure

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

PROC28: Manual maintenance (cleaning and repair) of machinery

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

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