SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

DIETHANOLAMINE (DEA)

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

1.1 Product identifier

Trade name: DIETHANOLAMINE (DEA)
Substance name: 2,2’-iminodiethanol
Index-No.: 603-071-00-1

REACH Registration Number: 01-2119488930-28-0006

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)
Acute toxicity, 4, H302
Skin irritation, 2, H315
Serious eye damage, 1, H318
Specific target organ toxicity - repeated exposure, 2, Blood, H373, Liver, Kidney

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

2.2 Label elements

1/135
Labelling (REGULATION (EC) No 1272/2008)

Pictogram:

Signal word: Danger

Hazard statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H373 May cause damage to organs (Blood, Liver, Kidney) through prolonged or repeated exposure if swallowed.

Precautionary statements:

Prevention:

- P260 Do not breathe mist, vapours or spray.
- P264 Wash skin thoroughly after handling.
- P280 Wear protective gloves/ eye protection/ face protection.

Response:

- 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.
- P314 Get medical advice/ attention if you feel unwell.

Disposal:

- P501 Dispose of contents/container in accordance with local regulation.

Hazardous components which must be listed on the label:

Diethanolamine 111-42-2

2.3 Other hazards

Do not add nitrates or other nitrosating agents - May form suspected cancer-causing nitrosamines. No further data available.

PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

CAS-No. : 111-42-2

Hazardous substance

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>PBT / vPvB OEL</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>REACH No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethanolamine</td>
<td>111-42-2</td>
<td>203-868-0</td>
<td>01-2119488930-28</td>
<td>Acute Tox. 4; H302</td>
<td>Skin Irrit. 2; H315</td>
<td>90 - 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1; H318</td>
<td>Eye Dam. 1; H318</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT RE 2; H373</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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.
If skin irritation persists, call a physician.

In case of eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

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.
Causes skin irritation.
Causes serious eye damage.
May cause damage to organs through prolonged or repeated exposure if swallowed.

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

: Do not allow run-off from fire fighting to enter drains or water courses.
Specific hazards arising from the chemical

: Carbon oxides
Combustion products

: 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.

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

: 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: 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.

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.

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethanolamine</td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>0.13 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>1 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>0.07 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>0.06 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>0.25 mg/m3</td>
</tr>
</tbody>
</table>
Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethanolamine</td>
<td>Fresh water</td>
<td>0.02 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.002 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent use/release</td>
<td>0.095 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>0.092 mg/kg dry weight</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.0092 mg/kg dry weight</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>100 mg/l</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>1.6 mg/kg dry weight</td>
</tr>
<tr>
<td></td>
<td>Secondary Poisoning</td>
<td>1.04 mg/kg food</td>
</tr>
</tbody>
</table>

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

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

**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** : 11.5 at 10 % solution

Melting point/range : 27 °C
at 1,013 hPa

Boiling point/boiling range : 270 °C
at 1,013 hPa

Flash point : 100 - 199 °C

Ignition temperature : > 150 °C

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Flammability (liquids) : Not classified as a flammability hazard

Lower explosion limit : 1.7 %(V)

Upper explosion limit : 10.1 %(V)

Vapour pressure : 0.00009 hPa at 20 °C

Relative vapour density : No data available

Density : ca.1,100 kg/m3 at 20 °C

Relative density : 1.1 at 20 °C

Water solubility : completely miscible

Solubility in other solvents : Soluble in ethanol and acetone.

Partition coefficient: n-octanol/water : log Pow: -2.46
at 25 °C

Auto-ignition temperature : 375 °C
at 1,013 hPa

Decomposition temperature : > 200 °C

Viscosity, dynamic : 380 mPa.s at 30 °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: None known.

10.5 Incompatible materials
Materials to avoid: Reacts with copper, aluminium, zinc and their alloys. Strong acids and oxidizing agents. Halogenated compounds.

10.6 Hazardous decomposition products
Hazardous decomposition products: Nitrogen oxides (NOx)
Thermal decomposition: > 200 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Product information:
Acute toxicity: Harmful if swallowed.
Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/eye irritation: Causes serious eye damage.
Respiratory or skin sensitisation: Respiratory sensitisation: Not classified based on available information. Skin sensitisation: Not classified based on available information.
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 : Not classified based on available information.
STOT - repeated exposure : May cause damage to organs (Blood, Liver, Kidney) through prolonged or repeated exposure if swallowed.
Aspiration hazard : Not classified based on available information.
Further information : No further data available.

Toxicology data for the components:
Diethanolamine

Acute toxicity:
Acute oral toxicity : LD50: > 300 - 2,000 mg/kg
Species: Rat
Acute inhalation toxicity : Not classified due to data which are conclusive although insufficient for classification.
Acute dermal toxicity : No data available
Skin corrosion/irritation : Species: Rabbit
Result: Irritating to skin.
Method: OECD Test Guideline 404
Serious eye damage/eye irritation : Species: Rabbit
Result: Risk of serious damage to eyes.
Method: OECD Test Guideline 405
Respiratory or skin sensitisation : Maximisation Test
Species: Guinea pig
Result: Does not cause skin sensitisation.
Method: OECD Test Guideline 406

Germ cell mutagenicity
Genotoxicity in vitro : Ames test
Result: negative
Genotoxicity in vivo : Chromosome aberration test in vivo
Species: Mouse
Result: negative

Carcinogenicity : Result: 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 : Based on available data, the classification criteria are not met.

STOT - repeated exposure : Exposure routes: Oral
Target Organs: Blood, Liver, Kidney
May cause 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.
Toxic to aquatic life.

12.1 Toxicity

Components:
Ecotoxicology Assessment
Diethanolamine
Acute aquatic toxicity : Toxic to aquatic life.

Test result
Diethanolamine
Toxicity to fish : LC50: > 100 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: static test
Literature data.

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

Toxicity to algae : EC50: > 1 - 10 mg/l
Exposure time: 96 h
Species: Pseudokirchneriella subcapitata (green algae)

Toxicity to daphnia and other aquatic invertebrates
(Chronic toxicity) : NOEC: 1.05 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test

12.2 Persistence and degradability

Product information:
Biodegradability : Result: Readily biodegradable.
Components:
Diethanolamine
Biodegradability : Result: Readily biodegradable.

12.3 Bioaccumulative potential
Product information:
Bioaccumulation : Not expected considering the low log Pow value.

Components:
Diethanolamine
Bioaccumulation : Not expected considering the low log Pow value.

12.4 Mobility in soil
Product information:
Mobility : Adsorption to the solid soil particles is not expected.
Transport to air is not expected.

Components:
Diethanolamine
Mobility : Adsorption to the solid soil particles is not expected.
Transport to air 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:
Diethanolamine
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:
Diethanolamine
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
DIETHANOLAMINE (DEA)

14.1 UN number
Not regulated as a dangerous good

14.2 Proper shipping name
Not regulated as a dangerous good

14.3 Transport hazard class
Not regulated as a dangerous good

14.4 Packing group
Not regulated as a dangerous good

14.5 Environmental hazards
Not regulated as a dangerous good

14.6 Special precautions for user
Remarks: Not classified as dangerous in the meaning of transport regulations.

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: Seveso Directive
Legislation: 2012/18/EU
Not applicable

Water contaminating class: WGK 1 slightly water endangering (Germany)

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.

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

15.2 Chemical safety assessment
Diethanolamine : 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.
H315 : Causes skin irritation.
H318 : Causes serious eye damage.
H373 : May cause damage to organs through prolonged or repeated
exposure if swallowed.

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; KECl - 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 -
Further information

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This data sheet contains changes from the previous version in section(s):

- Hazards identification
- Exposure controls/personal protection
- Ecological information
- Exposure scenario

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

- **Industrial formulation**
- **Professional formulation**
- **Use as an intermediate**
- **Industrial use, Additive in concrete and cement**
- **Professional use, Additive in concrete and cement**
- **Gas treatment**
- **Industrial use, Use in Metal working fluids**
- **Professional use, Use in Metal working fluids**
- **Industrial use, Use as additive in plastic, e.g. rubber**
- **Professional use, Use as additive in plastic, e.g. rubber**
- **Industrial use, Processing aid for paper, textile, leather**
- **Industrial use, Laboratory Reagents**
- **Professional use, Laboratory Reagents**
- **Industrial use, Use in oil and gas field drilling and production operations**
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:

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)

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

Amount used

Regional use tonnage (tonnes/year): 3000 ton(s/year)
Fraction of EU tonnage used in region: 100 %
Fraction of Regional tonnage used locally: 0.033333%
Maximum daily site tonnage (kg/day): 3.333 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 %
Emission or Release Factor: Water: 0.002 %
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

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96 %
Sludge Treatment: Sludge should be incinerated., No application to soil.

Conditions and measures related to external treatment of waste for disposal

2.1 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of 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: < 480 min
Remarks: Inhalation, Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palm of one hand (240 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

2.2 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 : < 480 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)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

2.3 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 : < 480 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palm of one hand (240 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

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

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

Amount used
Application rate : 0.75 L/min
Remarks : Dermal
Amount used : 15 l

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 20 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
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</table>

<table>
<thead>
<tr>
<th>Amount used</th>
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</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>15 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.75 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 20 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
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</table>

<table>
<thead>
<tr>
<th>Human factors not influenced by risk management</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal exposure</td>
<td>Palms of both hands (480 cm²)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other operational conditions affecting workers exposure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical conditions and measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local exhaust ventilation (Effectiveness (of a measure): 90 %)</td>
<td></td>
</tr>
</tbody>
</table>

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.
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

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

Amount used

Amount used: 15 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use

Exposure duration: < 240 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor: Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness (of a measure): 90 %)

Organisational measures to prevent/limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

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

Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
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

Amount used

Amount used: 1.5 l

Application rate: 0.05 L/min

Remarks: Dermal

Frequency and duration of use

Exposure duration: < 480 min

Remarks: Inhalation

Exposure duration (per shift): < 30 min

Remarks: Dermal

Frequency of use: <= 240 days/year

Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor: Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness of a measure): 95%
Amount used: 15 l
Application rate: 0.25 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 60 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness of a measure): 95 %
In case of exposure:
Use suitable eye protection.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>ERC2</td>
<td>EUSES</td>
<td></td>
<td></td>
<td>0.000123 mg/L</td>
<td>0.006139</td>
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<tr>
<td>Fresh water sediment</td>
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<td></td>
<td></td>
<td></td>
<td>0.000669 mg/kg dry weight</td>
<td>0.007273</td>
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<tr>
<td>Marine water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.000012 mg/L</td>
<td>0.005984</td>
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<tr>
<td>Marine sediment</td>
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<td></td>
<td></td>
<td></td>
<td>0.000065 mg/kg dry</td>
<td>0.00709</td>
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<tr>
<td>Contributing Scenario</td>
<td>Exposure Assessment Method</td>
<td>Specific conditions</td>
<td>Value</td>
<td>Level of Exposure</td>
<td>RCR</td>
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<tr>
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<td>-------</td>
<td>------------------</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC1</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0034 mg/kg bw/day</td>
<td>0.0264</td>
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<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
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<td>0.5275</td>
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<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
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<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0343 mg/kg bw/day</td>
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<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.095 mg/kg bw/day</td>
<td>0.731</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
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<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.095 mg/kg bw/day</td>
<td>0.731</td>
<td></td>
<td></td>
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<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
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<td></td>
<td></td>
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<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.754</td>
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<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
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<td>0.022 mg/m³</td>
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<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.106 mg/kg bw/day</td>
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<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
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<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.103 mg/kg bw/day</td>
<td>0.792</td>
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</table>

ERC2: Formulation of preparations
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)

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
1. Short title of Exposure Scenario: Professional formulation

Main User Groups: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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

Process categories:
- 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)

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

Activity: Environmental exposure assessment for this scenario is not relevant.

2.2 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: < 480 min
- Remarks: Inhalation, Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management
DIETHANOLAMINE (DEA)

Dermal exposure : Palm of one hand (240 cm2)

Other operational conditions affecting workers exposure
   Outdoor / Indoor : Indoor

Technical conditions and measures
   Local exhaust ventilation (Effectiveness (of a measure): 80 %)

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
   Avoid skin contact.
   Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
   In case of exposure:
      Use suitable eye protection.

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

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

Amount used
   Application rate : 0.75 L/min
   Remarks : Dermal
   Amount used : 7.5 l

Frequency and duration of use
   Exposure duration : < 480 min
   Remarks : Inhalation
   Exposure duration (per shift) : < 10 min
   Remarks : Dermal
   Frequency of use : <= 240 days/year

Human factors not influenced by risk management
   Dermal exposure : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
   Outdoor / Indoor : Indoor

Technical conditions and measures
   Local exhaust ventilation (Effectiveness (of a measure): 80 %)
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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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

Amount used
Amount used: 7.5 l
Application rate: 0.75 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 10 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 80 %)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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 100 % (unless stated differently).
Physical Form (at time of use) : liquid

Amount used
Amount used : 8 l
Application rate : 0.5 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 15 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 80 %)

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
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

Amount used
Amount used: 0.75 l
Application rate: 0.05 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 15 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
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

Amount used
Amount used: 6 l
Application rate: 0.25 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 25 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 80 %)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

3. Exposure estimation and reference to its source

Workers
#### Contributing Scenario

**Exposure Assessment Method**

**Specific conditions**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Method</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0876 mg/m³</td>
<td>0.0695</td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0876 mg/m³</td>
<td>0.0695</td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.096 mg/kg bw/day</td>
<td>0.738</td>
</tr>
<tr>
<td>PROCFDerm</td>
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<td>0.096 mg/kg bw/day</td>
<td>0.0695</td>
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<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0876 mg/m³</td>
<td>0.0695</td>
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<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.096 mg/kg bw/day</td>
<td>0.738</td>
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<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0876 mg/m³</td>
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<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.097 mg/kg bw/day</td>
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<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
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<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.106 mg/kg bw/day</td>
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<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0876 mg/m³</td>
<td>0.0695</td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.086 mg/kg bw/day</td>
<td>0.661</td>
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</tbody>
</table>

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/dis charging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/dis charging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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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
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: Industrial use resulting in manufacture of another substance (use of intermediates)

Process categories: PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels’ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels’ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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

Amount used
Regional use tonnage (tonnes/year): 9000 ton(s)/year
Fraction of EU tonnage used in region: 100 %
Fraction of Regional tonnage used locally: 0.011111 %
Maximum daily site tonnage (kg/day): 3.3333 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 %
Emission or Release Factor: Water: 0.002 %
Emission or Release Factor: Soil: 0 %

Technical conditions and measures / Organizational measures
Exposure time: Continuous use/release
Compartment: Fresh water, Fresh water sediment, Marine water, Marine
Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96%
Sludge Treatment: Sludge should be incinerated, No application to soil.

Conditions and measures related to external treatment of waste for disposal

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of 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: < 480 min
Remarks: Inhalation, Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palm of one hand (240 cm2)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90%)
In case of exposure:
Use suitable eye protection.

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**: < 480 min
- **Remarks**: Inhalation, Dermal
- **Frequency of use**: <= 240 days/year

Human factors not influenced by risk management

- **Dermal exposure**: Palm of both hands (480 cm²)

Other operational conditions affecting workers exposure

- **Outdoor / Indoor**: Indoor

Technical conditions and measures

- **Local exhaust ventilation**: 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

- Avoid skin contact.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Effectiveness (of a measure): 95%
- In case of exposure:
  - 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**: < 480 min
- **Remarks**: Inhalation, Dermal
- **Frequency of use**: <= 240 days/year

Human factors not influenced by risk management

- **Dermal exposure**: Palm of one hand (240 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
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 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

Amount used
Amount used: 15 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 %)

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>1.5 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.05 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 30 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human factors not influenced by risk management</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other operational conditions affecting workers exposure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical conditions and measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local exhaust ventilation</td>
<td>(Effectiveness (of a measure): 95 %)</td>
</tr>
</tbody>
</table>

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
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

Amount used
- Amount used: 15 l
- Application rate: 0.25 L/min
- Remarks: Dermal

Frequency and duration of use
- Exposure duration: < 480 min
- Remarks: Inhalation
- Exposure duration (per shift): < 60 min
- Remarks: Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management
- Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor

Technical conditions and measures
- Local exhaust ventilation (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
- Avoid skin contact.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
- In case of exposure:
  - Use suitable eye protection.

3. Exposure estimation and reference to its source

| Environment |
|-------------|----------------|----------------|-----------------|------|-----------------|--------|
| Contributing Scenario | Exposure Assessment | Specific conditions | Compartme nt | Value | Level of Exposure | RCR |


### Method

<table>
<thead>
<tr>
<th>ERC6a</th>
<th>EUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>0.000123 mg/L</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>0.000669 mg/kg dry weight</td>
</tr>
<tr>
<td>Marine water</td>
<td>0.000012 mg/L</td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.000065 mg/kg dry weight</td>
</tr>
<tr>
<td>Soil</td>
<td>0.000169 mg/kg dry weight</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>&lt; 0.00001 mg/L</td>
</tr>
</tbody>
</table>

### Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0034 mg/kg bw/day</td>
<td>0.0264</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.4381 mg/m³</td>
<td>0.3477</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0343 mg/kg bw/day</td>
<td>0.2637</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.7538</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0219 mg/m³</td>
<td>0.0174</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.106 mg/kg bw/day</td>
<td>0.8154</td>
<td></td>
</tr>
<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.103 mg/kg bw/day</td>
<td>0.7923</td>
<td></td>
</tr>
</tbody>
</table>
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
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)
PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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

For further information, please also consult our Internet site: Downstream Users
1. Short title of Exposure Scenario: Industrial use, Additive in concrete and cement

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Release Categories</td>
<td>ERC5: Industrial use resulting in inclusion into or onto a matrix</td>
</tr>
<tr>
<td>Process categories</td>
<td>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 PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent</td>
</tr>
</tbody>
</table>

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

**Amount used**

<table>
<thead>
<tr>
<th>Regional use tonnage (tonnes/year):</th>
<th>1000 ton(s)/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction of EU tonnage used in region:</td>
<td>100 %</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally:</td>
<td>0.1 %</td>
</tr>
<tr>
<td>Daily amount per site:</td>
<td>10 kg/day</td>
</tr>
</tbody>
</table>

**Environment factors not influenced by risk management**

<table>
<thead>
<tr>
<th>Dilution Factor (River):</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilution Factor (Coastal Areas):</td>
<td>100</td>
</tr>
</tbody>
</table>

**Other given operational conditions affecting environmental exposure**

<table>
<thead>
<tr>
<th>Number of emission days per year:</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission or Release Factor: Air:</td>
<td>0 %</td>
</tr>
<tr>
<td>Emission or Release Factor: Water:</td>
<td>0.002 %</td>
</tr>
<tr>
<td>Emission or Release Factor: Soil:</td>
<td>0 %</td>
</tr>
</tbody>
</table>

**Technical conditions and measures / Organizational measures**

<table>
<thead>
<tr>
<th>Exposure time:</th>
<th>Continuous use/release</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compartment:</td>
<td>Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant</td>
</tr>
</tbody>
</table>
Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96%
Sludge Treatment: Sludge should be incinerated, no application to soil.

Conditions and measures related to external treatment of waste for disposal

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

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

Amount used
Amount used: 3000 l
Application rate: 25 L/min

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 120 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands plus forearms (1500 cm²).

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
, Spraying with high compressed air use, ensure that direction of application is only horizontal or downward.
, Ensure that the distance from worker to task is greater than 1 m.

Technical conditions and measures
Ensure adequate ventilation. (Effectiveness of a measure): 90%
Minimise exposure by ventilated complete enclosure of the operator or equipment.
(Effectiveness of a measure): 90%

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Wear suitable face shield.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Application rate</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency of use</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure: Both hands plus forearms (1500 cm²).

Other operational conditions affecting workers exposure
Outdoor / Indoor: Outdoor
Distance from the worker to the emission source: < 4 meter(s)
Spraying horizontal or downward, Spraying with high compressed air use, Ensure that direction of application is only horizontal or downward., Ensure that the distance from worker to task is greater than 1 m.

Technical conditions and measures
Ensure adequate ventilation. (Effectiveness (of a measure): 90 %)
Partial personal enclosure without ventilation (Effectiveness (of a measure): 90 %)

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Wear suitable face shield.

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

<table>
<thead>
<tr>
<th>Activity characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Indoor</td>
</tr>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 25 %</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Amount used</td>
<td>30 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.5 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 60 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>≤ 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Organisational measures to prevent /limit releases, dispersion and exposure</td>
<td></td>
</tr>
<tr>
<td>Assumes a good basic standard of occupational hygiene is implemented</td>
<td></td>
</tr>
<tr>
<td>Supervision in place to check that the RMMs in place are being used correctly and OCs followed.</td>
<td></td>
</tr>
</tbody>
</table>

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Outdoor</td>
</tr>
</tbody>
</table>
Product characteristics

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

Amount used
Amount used: 30 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration (per shift): < 60 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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

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

Amount used
Amount used: 2.25 l
Application rate: 0.05 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration (per shift): < 45 min
Remarks: Inhalation, Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 25 %</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td>2.25 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.05 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 45 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Amount used</strong></td>
<td></td>
</tr>
<tr>
<td>Surface area</td>
<td>3 m²/hour</td>
</tr>
<tr>
<td>Remarks</td>
<td>minimum</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>≤ 240 days/year</td>
</tr>
<tr>
<td><strong>Human factors not influenced by risk management</strong></td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td><strong>Other operational conditions affecting workers exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Room size</td>
<td>300 m³</td>
</tr>
<tr>
<td>Temperature</td>
<td>20 °C</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
<td>3</td>
</tr>
</tbody>
</table>

Organisational measures to prevent / limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.
2.10 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Surface area</td>
<td>3 m²/hour</td>
</tr>
<tr>
<td>Remarks</td>
<td>minimum</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Outdoor

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure | Palms of both hands (480 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
</table>

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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: < 480 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)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness of a measure): 95 %
Use suitable eye protection.

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

Activity: Outdoor

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: < 480 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)

Other operational conditions affecting workers exposure
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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

2.16 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 25%.
Physical Form (at time of use) : liquid

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

Human factors not influenced by risk management
Dermal exposure : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

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

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>ERC5</th>
<th>EUSES</th>
<th>Fresh water</th>
<th>0.000123 mg/L</th>
<th>0.006152</th>
</tr>
</thead>
</table>

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### DIETHANOLAMINE (DEA)

<table>
<thead>
<tr>
<th>Fresh water sediment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine water</td>
<td>0.000012 mg/L</td>
<td>0.005997</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.000065 mg/kg dry weight</td>
<td>0.007106</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.000169 mg/kg dry weight</td>
<td>0.000106</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>&lt; 0.00001 mg/L</td>
<td>&lt; 0.00001</td>
<td></td>
</tr>
</tbody>
</table>

#### Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7 ART</td>
<td>Long term inhalation</td>
<td>0.560 mg/m³</td>
<td>0.4444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.052 mg/kg bw/day</td>
<td>0.400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC7 ART</td>
<td>Long term inhalation</td>
<td>0.170 mg/m³</td>
<td>0.1349</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.084 mg/kg bw/day</td>
<td>0.6462</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC8a ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.1095 mg/m³</td>
<td>0.0869</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.7538</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC8a ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0767 mg/m³</td>
<td>0.0608</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.7538</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC8b ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.1095 mg/m³</td>
<td>0.0869</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.079 mg/kg bw/day</td>
<td>0.6077</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC8b ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0767 mg/m³</td>
<td>0.0608</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.079 mg/kg bw/day</td>
<td>0.6077</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC10 ART</td>
<td>Long term inhalation</td>
<td>0.057 mg/m³</td>
<td>0.0452</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC10 ART</td>
<td>Long term inhalation</td>
<td>0.091 mg/m³</td>
<td>0.0722</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Long term</td>
<td>0.0686</td>
<td>0.5275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Exposure Scenario</td>
<td>dermal</td>
<td>mg/kg bw/day</td>
<td>dermal</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>-------------------</td>
<td>--------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>Proc13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0219 mg/m³</td>
<td>0.0174</td>
<td>0.0343 mg/kg bw/day</td>
</tr>
<tr>
<td>Proc13</td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0153 mg/kg bw/day</td>
<td>0.0122</td>
<td>0.0343 mg/kg bw/day</td>
</tr>
<tr>
<td>Proc14</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0219 mg/m³</td>
<td>0.0174</td>
<td>0.0086 mg/kg bw/day</td>
</tr>
<tr>
<td>Proc14</td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0153 mg/kg bw/day</td>
<td>0.0122</td>
<td>0.0086 mg/kg bw/day</td>
</tr>
<tr>
<td>Proc15</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.1095 mg/m³</td>
<td>0.0869</td>
<td>0.0086 mg/kg bw/day</td>
</tr>
</tbody>
</table>

ERC5: Industrial use resulting in inclusion into or onto a matrix  
PROC10: Roller application or brushing  
PROC13: Treatment of articles by dipping and pouring  
PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation  
PROC15: Use as laboratory reagent  
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  
## 1. Short title of Exposure Scenario: Professional use, Additive in concrete and cement

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Release Categories</td>
<td>ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix</td>
</tr>
<tr>
<td>Process categories</td>
<td>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels’ large containers at non-dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC10: Roller application or brushing</td>
</tr>
<tr>
<td></td>
<td>PROC11: Non industrial spraying</td>
</tr>
<tr>
<td></td>
<td>PROC13: Treatment of articles by dipping and pouring</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Amount used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional use tonnage (tonnes/year): 1000 ton(s)/year</td>
</tr>
<tr>
<td>Fraction of EU tonnage used in region: 10 %</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally: 0.2 %</td>
</tr>
<tr>
<td>Daily amount per site: 0.548 kg/day</td>
</tr>
</tbody>
</table>

Environment factors not influenced by risk management

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

Other given operational conditions affecting environmental exposure

| Number of emission days per year: 365 |
| Emission or Release Factor: Air: 0 % |
| Emission or Release Factor: Water: 1 % |
| Emission or Release Factor: Soil: 3.7 % |
| Remarks: EFCC SPERC 8F.1a.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 |

Conditions and measures related to municipal sewage treatment plant

| Type of Sewage Treatment Plant: Municipal sewage treatment plant |
2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

<table>
<thead>
<tr>
<th>Activity characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Indoor</td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 25 %</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Amount used</td>
<td>22.5 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.75 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 30 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure | Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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)

<table>
<thead>
<tr>
<th>Activity characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Outdoor</td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 25 %</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>
Amount used
Amount used : 22.5 l
Application rate : 0.75 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 30 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Remarks:
Dermal

Human factors not influenced by risk management
Dermal exposure : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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

Amount used
Amount used : 30 l
Application rate : 0.5 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 60 min
Remarks : Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

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

Amount used
Amount used: 30 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 60 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Outdoor

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Amount used</td>
<td>2.5 l</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.25 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Surface area</td>
<td>3 m²/hour</td>
</tr>
<tr>
<td>Remarks</td>
<td>minimum</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 10 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Room size</td>
<td>30 m³</td>
</tr>
<tr>
<td>Temperature</td>
<td>20 °C</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
<td>1</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC10: Roller application or brushing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Amount used</strong></td>
<td></td>
</tr>
<tr>
<td>Amount used</td>
<td>2.5 l</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.25 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Surface area</td>
<td>3 m²/hour</td>
</tr>
<tr>
<td>Remarks</td>
<td>minimum</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 10 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td><strong>Human factors not influenced by risk management</strong></td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td><strong>Other operational conditions affecting workers exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Outdoor</td>
</tr>
<tr>
<td><strong>Organisational measures to prevent /limit releases, dispersion and exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Assumes a good basic standard of occupational hygiene is implemented</td>
<td></td>
</tr>
<tr>
<td>Supervision in place to check that the RMMs in place are being used correctly and OCs followed.</td>
<td></td>
</tr>
</tbody>
</table>

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

Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC11: Non industrial spraying

**Activity**: Indoor

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

**Amount used**
- **Amount used**: 250 l
- **Application rate**: 25 L/min
- **Remarks**: Dermal

**Frequency and duration of use**
- **Exposure duration**: < 480 min
- **Remarks**: Inhalation
- **Exposure duration (per shift)**: < 10 min
- **Remarks**: Dermal
- **Frequency of use**: <= 240 days/year

**Human factors not influenced by risk management**
- **Dermal exposure**: Both hands plus forearms (1500 cm²).

**Other operational conditions affecting workers exposure**
- **Outdoor / Indoor**: Indoor
- **Room size**: 100 m³
- **Temperature**: 20 °C
- **Ventilation rate per hour**: 1

**Technical conditions and measures**
- Ensure that the direction of airflow is clearly away from the worker.
- Ensure that the distance from worker to task is greater than 1 m.
- Ensure that direction of application is only horizontal or downward.
- Spraying with high compressed air use

**Organisational measures to prevent /limit releases, dispersion and exposure**
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

**Conditions and measures related to personal protection, hygiene and health evaluation**
- **Avoid skin contact.**
- **Wear suitable coveralls to prevent exposure to the skin.**
- **Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)**
- **Wear respiratory protection. (Effectiveness (of a measure): 95 %)**
- **Wear suitable face shield.**
2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

<table>
<thead>
<tr>
<th>Activity</th>
<th>Outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Amount used</td>
<td>750 l</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Application rate</td>
<td>25 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 30 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands plus forearms (1500 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Outdoor</td>
</tr>
<tr>
<td>Technical conditions and measures</td>
<td></td>
</tr>
<tr>
<td>Ensure that the direction of airflow is clearly away from the worker.</td>
<td></td>
</tr>
<tr>
<td>Ensure that the distance from worker to task is greater than 1 m.</td>
<td></td>
</tr>
<tr>
<td>Ensure that direction of application is only horizontal or downward.</td>
<td></td>
</tr>
<tr>
<td>Organisational measures to prevent /limit releases, dispersion and exposure</td>
<td></td>
</tr>
<tr>
<td>Assumes a good basic standard of occupational hygiene is implemented</td>
<td></td>
</tr>
<tr>
<td>Supervision in place to check that the RMMs in place are being used correctly and OCs followed.</td>
<td></td>
</tr>
<tr>
<td>Conditions and measures related to personal protection, hygiene and health evaluation</td>
<td></td>
</tr>
<tr>
<td>Avoid skin contact.</td>
<td></td>
</tr>
<tr>
<td>Wear suitable coveralls to prevent exposure to the skin.</td>
<td></td>
</tr>
<tr>
<td>Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)</td>
<td></td>
</tr>
<tr>
<td>Wear suitable face shield.</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
</table>
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: < 480 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)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

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

Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC13: Treatment of articles by dipping and pouring

Activity: Outdoor

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: < 480 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)

Other operational conditions affecting workers exposure

Outdoor / Indoor: Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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

<table>
<thead>
<tr>
<th>Environment</th>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartments</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8f</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td></td>
<td>0.00016 mg/L</td>
<td>0.0079</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td></td>
<td>0.00086 mg/kg dry weight</td>
<td>0.0093</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td>0.0077</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td></td>
<td>&lt; 0.0001 mg/kg dry weight</td>
<td>0.0091</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td></td>
<td>0.00018 mg/kg dry weight</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td></td>
<td>0.00035 mg/L</td>
<td>&lt; 0.0001</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Workers</th>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td></td>
<td>0.1095 mg/m³</td>
<td>0.0869</td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td></td>
<td>0.071 mg/kg bw/day</td>
<td>0.5462</td>
<td></td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td></td>
<td>0.0767 mg/m³</td>
<td>0.0608</td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td></td>
<td>0.071 mg/kg bw/day</td>
<td>0.5462</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td></td>
<td>0.1095 mg/m³</td>
<td>0.0869</td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term</td>
<td></td>
<td>0.098 mg/kg</td>
<td>0.7538</td>
<td></td>
</tr>
</tbody>
</table>
### DIETHANOLAMINE (DEA)

**Version 3**
**Revision Date 07.06.2017**
**Print Date 27.07.2017**

<table>
<thead>
<tr>
<th>PROC</th>
<th>Source</th>
<th>Exposure Scenario</th>
<th>Dermal bw/day</th>
<th>Risk of Dermal bw/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0767 mg/m³</td>
<td>0.0608</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.7538</td>
</tr>
<tr>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.025 mg/m³</td>
<td>0.0198</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term dermal</td>
<td>0.099 mg/kg bw/day</td>
<td>0.7615</td>
</tr>
<tr>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.0191 mg/m³</td>
<td>0.0722</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term dermal</td>
<td>0.099 mg/kg bw/day</td>
<td>0.7615</td>
</tr>
<tr>
<td>PROC11</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.340 mg/m³</td>
<td>0.2698</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term dermal</td>
<td>0.053 mg/kg bw/day</td>
<td>0.4077</td>
</tr>
<tr>
<td>PROC11</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.240 mg/m³</td>
<td>0.1905</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term dermal</td>
<td>0.086 mg/kg bw/day</td>
<td>0.6615</td>
</tr>
<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0219 mg/m³</td>
<td>0.0174</td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
</tr>
<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0153 mg/m³</td>
<td>0.0122</td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
</tr>
</tbody>
</table>

**ERC8f:** Wide dispersive outdoor use resulting in inclusion into or onto a matrix  
**PROC10:** Roller application or brushing  
**PROC11:** Non industrial spraying  
**PROC13:** Treatment of articles by dipping and pouring  
**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

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  
1. Short title of Exposure Scenario: Gas treatment

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Release Categories</td>
<td>ERC7: Industrial use of substances in closed systems</td>
</tr>
<tr>
<td>Process categories</td>
<td>PROC1: Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td></td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td></td>
<td>PROC3: Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td></td>
<td>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Amount used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional use tonnage (tonnes/year): 200 ton(s/year)</td>
</tr>
<tr>
<td>Fraction of EU tonnage used in region: 100 %</td>
</tr>
<tr>
<td>Fraction of Regional tonnage used locally: 0.5 %</td>
</tr>
<tr>
<td>Daily amount per site: 2.857 kg/day</td>
</tr>
</tbody>
</table>

Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Dilution Factor (River)</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

Other given operational conditions affecting environmental exposure

| Number of emission days per year: 350 |
| Emission or Release Factor: Air: 0 % |
| Emission or Release Factor: Water: 0.002 % |
| Emission or Release Factor: Soil: 0 % |

Technical conditions and measures / Organizational measures

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

Conditions and measures related to municipal sewage treatment plant

| Type of Sewage Treatment Plant: Municipal sewage treatment plant |
| Percentage removed from waste: 96 % |
Sludge Treatment: Sludge should be incinerated. No application to soil.

Conditions and measures related to external treatment of waste for disposal:

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of 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: < 480 min
- Remarks: Inhalation, Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management:
- Dermal exposure: Palm of one hand (240 cm²)

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:
- Avoid skin contact.
- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness of a measure): 90%
- In case of exposure: Use suitable eye protection.

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: < 480 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)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness of a measure): 95 %
In case of exposure:
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 : < 480 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palm of one hand (240 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness of a measure): 95 %
In case of exposure:
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers the percentage of the substance in the product up to 100 % (unless stated differently).</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>1.5 l</td>
</tr>
<tr>
<td>Application rate</td>
<td>0.05 L/min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Exposure duration (per shift)</td>
<td>&lt; 30 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

| Human factors not influenced by risk management |          |
| Dermal exposure | Both hands (960 cm²) |

| Other operational conditions affecting workers exposure |          |
| Indoor/Outdoor | Indoor |

| Technical conditions and measures |          |
| Local exhaust ventilation (Effectiveness (of a measure): 95 %) |          |

| 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 |          |
| Avoid skin contact. | Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %) |
| In case of exposure: | Use suitable eye protection. |

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

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartme nt</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC7</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.00012 mg/L</td>
<td>0.00614</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.00067 mg/kg dry weight</td>
<td>0.00727</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td>0.00598</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>&lt; 0.0001 mg/kg dry weight</td>
<td>0.00709</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td>0.00017 mg/kg dry weight</td>
<td>0.00011</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td>&lt; 0.0001</td>
<td></td>
</tr>
</tbody>
</table>

## Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0034 mg/kg bw/day</td>
<td>0.0264</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0438 mg/m³</td>
<td>0.0348</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0686 mg/kg bw/day</td>
<td>0.5275</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.4381 mg/m³</td>
<td>0.3477</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.0343 mg/kg bw/day</td>
<td>0.2637</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.0219 mg/m³</td>
<td>0.0174</td>
<td></td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td>0.106 mg/kg bw/day</td>
<td>0.8154</td>
<td></td>
</tr>
</tbody>
</table>

ERC7: Industrial use of substances in closed systems
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

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream_users_en.htm
1. Short title of Exposure Scenario: Industrial use, Use in Metal working fluids

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:
- 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
- PROC10: Roller application or brushing
- PROC13: Treatment of articles by dipping and pouring
- PROC17: Lubrication at high energy conditions and in partly open process
- PROC18: Greasing at high energy conditions

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): 100 ton(s)/year
- Fraction of EU tonnage used in region: 100 %
- Fraction of Regional tonnage used locally: 1 %
- Daily amount per site: 10 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: 100
- Emission or Release Factor: Air: 0 %
- Emission or Release Factor: Water: 0.002 %
- Emission or Release Factor: Soil: 0 %

Technical conditions and measures / Organizational measures
DIETHANOLAMINE (DEA)

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

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96%
Sludge Treatment: Sludge should be incinerated., No application to soil.

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Municipal waste incineration
Disposal methods: (Effectiveness (of a measure): 100%)

2.2 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 percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90%)
In case of exposure:
Use suitable eye protection.

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)
DIETHANOLAMINE (DEA)

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 22.5 l
Application rate: 0.75 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

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

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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 percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 23 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 45 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm2)

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.
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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 percentage substance in the product up to 2.5%
Physical Form (at time of use) : liquid

Amount used
Amount used : 2.25 l
Application rate : 0.05 L/min

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 45 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm2)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 0.25%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Surface area</td>
<td>3 m2/hour</td>
</tr>
<tr>
<td>Remarks</td>
<td>minimum</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm2)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Room size</td>
<td>300 m3</td>
</tr>
<tr>
<td>Temperature</td>
<td>20 °C</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
<td>3</td>
</tr>
</tbody>
</table>

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

| Product characteristics | | |
| Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 0.25% |
| Physical Form (at time of use) | liquid |
| Frequency and duration of use | | |
| Exposure duration | < 480 min |
| Remarks | Inhalation |
| Frequency of use | <= 240 days/year |
Human factors not influenced by risk management

Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor: Indoor

2.8 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

<table>
<thead>
<tr>
<th>Activity</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 0.25%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor: Indoor

Room size: 300 m³
Temperature: > 20 °C
Ventilation rate per hour: 3

Technical conditions and measures

Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90 %)

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

2.9 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

<table>
<thead>
<tr>
<th>Activity</th>
<th>Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 0.25%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m³
Temperature : > 20 °C
Ventilation rate per hour : 3

2.10 Contributing scenario controlling worker exposure for: PROC18: Greasing at high energy conditions

Activity : Manual process
Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.25%.
Physical Form (at time of use) : liquid

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

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Room size : 300 m³
Temperature : > 20 °C
Ventilation rate per hour : 3

Technical conditions and measures
Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90%)

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

2.11 Contributing scenario controlling worker exposure for: PROC18: Greasing at high energy conditions

Activity : Machine
Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 0.25%.
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation, Dermal
Frequency of use : <= 240 days/year
Human factors not influenced by risk management

Dermal exposure : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Room size : 300 m³
Temperature : > 20 °C
Ventilation rate per hour : 3

Organisational measures to prevent / limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartmen t</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC4</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.00012 mg/L</td>
<td></td>
<td>0.00615</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.00067 mg/kg dry weight</td>
<td></td>
<td>0.00729</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td></td>
<td>0.00600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>&lt; 0.0001 mg/kg dry weight</td>
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<tr>
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<td>Soil</td>
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<td>0.00017 mg/kg dry weight</td>
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<td>0.00011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td></td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
<td></td>
<td>0.00870</td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.00343 mg/kg bw/day</td>
<td></td>
<td>0.02637</td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
<td></td>
<td>0.00869</td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.007 mg/kg bw/day</td>
<td></td>
<td>0.05385</td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term</td>
<td>0.01095</td>
<td></td>
<td>0.00869</td>
</tr>
</tbody>
</table>
### DIETHANOLAMINE (DEA)

**Version 3**  
**Revision Date 07.06.2017**  
**Print Date 27.07.2017**  
**GB / EN**

<table>
<thead>
<tr>
<th>ERC4</th>
<th>Proc</th>
<th>ECETOC TRA</th>
<th>Long term inhalation</th>
<th>mg/m³</th>
<th>Long term dermal</th>
<th>mg/kg bw/day</th>
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</thead>
<tbody>
<tr>
<td>ERC4</td>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.0028 mg/m³</td>
<td>0.0022</td>
<td></td>
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<tr>
<td></td>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.00110 mg/m³</td>
<td>0.00087</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROC17</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.0084 mg/m³</td>
<td>0.00667</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROC17</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.002 mg/m³</td>
<td>0.00159</td>
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<tr>
<td></td>
<td>PROC18</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.0084 mg/m³</td>
<td>0.00667</td>
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<tr>
<td></td>
<td>PROC18</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.002 mg/m³</td>
<td>0.00159</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
<td>0.00869</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.008 mg/kg bw/day</td>
<td>0.06154</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
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<td></td>
<td>PROC8b</td>
<td>ECETOC TRA</td>
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<td>0.01095 mg/m³</td>
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<td></td>
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<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.008 mg/kg bw/day</td>
<td>0.06154</td>
<td></td>
<td></td>
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</tbody>
</table>

**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles  
**PROC10:** Roller application or brushing  
**PROC13:** Treatment of articles by dipping and pouring  
**PROC17:** Lubrication at high energy conditions and in partly open process  
**PROC18:** Greasing at high energy conditions  
**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
1. Short title of Exposure Scenario: Professional use, Use in Metal working fluids

Main User Groups: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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

Process categories:
- PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
- PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels’ large containers at non-dedicated facilities
- PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels’ large containers at dedicated facilities
- PROC10: Roller application or brushing
- PROC13: Treatment of articles by dipping and pouring
- PROC17: Lubrication at high energy conditions and in partly open process
- PROC18: Greasing at high energy conditions
- PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

Amount used:
- Regional use tonnage: 100 ton(s)/year
- Fraction of EU tonnage used in region: 10%
- Fraction of Regional tonnage used locally: 0.05%
- Daily amount per site: 0.013699 kg/day

Environment factors not influenced by risk management:
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure:
- Number of emission days per year: 365
- Emission or Release Factor: Air: 0.5%
- Emission or Release Factor: Water: 5%
- Emission or Release Factor: Soil: 5%
- Remarks: spERC: ESVOC SpERC 8.7c.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

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant

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

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 22.5 l
Application rate: 0.75 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

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

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 23 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 45 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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 percentage substance in the product up to 2.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 2.25 l
Application rate: 0.05 L/min
Remarks: Dermal
DIETHANOLAMINE (DEA)

Frequency and duration of use
- Exposure duration: < 480 min
- Remarks: Inhalation
- Exposure duration (per shift): < 45 min
- Remarks: Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management
- Dermal exposure: Both hands (960 cm²)

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
- Avoid skin contact.
- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
- In case of exposure:
  - Use suitable eye protection.

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

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 0.25%.
- Physical Form (at time of use): liquid

Amount used
- Surface area: 3 m²/hour
- Remarks: maximum

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

Human factors not influenced by risk management
- Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Room size: 30 m³
- Temperature: > 20 °C
- Ventilation rate per hour: 1

Technical conditions and measures
Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90 %)

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

### 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 percentage substance in the product up to 0.25%.
- **Physical Form (at time of use)**: liquid

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

**Human factors not influenced by risk management**
- **Dermal exposure**: Palms of both hands (480 cm²)

**Other operational conditions affecting workers exposure**
- **Outdoor / Indoor**: Indoor

**Technical conditions and measures**
- No special technical protective measures required.

### 2.7 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

**Activity**: Manual

**Product characteristics**
- **Concentration of the Substance in Mixture/Article**: Covers percentage substance in the product up to 0.25%.
- **Physical Form (at time of use)**: liquid

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

**Human factors not influenced by risk management**
- **Dermal exposure**: Both hands (960 cm²)

**Other operational conditions affecting workers exposure**
DIETHANOLAMINE (DEA)

Technical conditions and measures
Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90 %)

2.8 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

<table>
<thead>
<tr>
<th>Activity</th>
<th>Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 0.25%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Room size</td>
<td>30 m³</td>
</tr>
<tr>
<td>Temperature</td>
<td>&gt; 20 °C</td>
</tr>
<tr>
<td>Ventilation rate per hour</td>
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</tr>
</tbody>
</table>

2.9 Contributing scenario controlling worker exposure for: PROC18: Greasing at high energy conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Manual</th>
</tr>
</thead>
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<tr>
<td>Product characteristics</td>
<td></td>
</tr>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 0.25%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
<tr>
<td>Exposure duration</td>
<td>&lt; 480 min</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
<tr>
<td>Human factors not influenced by risk management</td>
<td></td>
</tr>
<tr>
<td>Dermal exposure</td>
<td>Both hands (960 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
</tbody>
</table>
Room size: 30 m³
Temperature: > 20 °C
Ventilation rate per hour: 1

Technical conditions and measures
Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90 %)

2.10 Contributing scenario controlling worker exposure for: PROC18: Greasing at high energy conditions

Activity: Machine
Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 0.25%.
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Room size: 30 m³
Temperature: > 20 °C
Ventilation rate per hour: 1

2.11 Contributing scenario controlling worker exposure for: PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 0.25%.
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
No special technical protective measures required.
3. Exposure estimation and reference to its source

### Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartmen t</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8a</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.00013 mg/L</td>
<td></td>
<td>0.00635</td>
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<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.00069 mg/kg dry weight</td>
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<td>0.00752</td>
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<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
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<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>&lt; 0.0001 mg/kg dry weight</td>
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<tr>
<td></td>
<td></td>
<td>Soil</td>
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<td>0.00017 mg/kg dry weight</td>
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<td>0.00011</td>
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<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td></td>
<td>&lt; 0.001</td>
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</table>

### Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
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<td>0.00869</td>
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<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td>0.007 mg/kg bw/day</td>
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<td>0.05385</td>
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<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
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<td>0.00869</td>
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<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td>0.007 mg/kg bw/day</td>
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<td>0.05385</td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.01095 mg/m³</td>
<td></td>
<td>0.00869</td>
</tr>
<tr>
<td>RISKOFDERM</td>
<td></td>
<td>Long term dermal</td>
<td>0.008 mg/kg bw/day</td>
<td></td>
<td>0.06154</td>
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<tr>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.0064 mg/m³</td>
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<td>ECETOC TRA</td>
<td></td>
<td>Long term dermal</td>
<td>0.06857 mg/kg bw/day</td>
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<td>0.52747</td>
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<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.00110 mg/m³</td>
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<td>ECETOC TRA</td>
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<td>Long term</td>
<td>0.03429 mg/m³</td>
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<td>0.26374</td>
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<tr>
<td>Procedure</td>
<td>Exposure</td>
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<tr>
<td>PROC17 ART</td>
<td>Long term inhalation</td>
<td>0.013 mg/m³</td>
<td>0.01032</td>
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<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.006857 mg/kg bw/day</td>
<td>0.52747</td>
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<tr>
<td>PROC17 ART</td>
<td>Long term inhalation</td>
<td>0.011 mg/m³</td>
<td>0.00873</td>
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<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.006857 mg/kg bw/day</td>
<td>0.52747</td>
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<td></td>
</tr>
<tr>
<td>PROC18 ART</td>
<td>Long term inhalation</td>
<td>0.013 mg/m³</td>
<td>0.01032</td>
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<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.003429 mg/kg bw/day</td>
<td>0.26374</td>
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<tr>
<td>PROC18 ART</td>
<td>Long term inhalation</td>
<td>0.011 mg/m³</td>
<td>0.00873</td>
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<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.003429 mg/kg bw/day</td>
<td>0.26374</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC20 ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.00110 mg/m³</td>
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<tr>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.00429 mg/kg bw/day</td>
<td>0.03297</td>
<td></td>
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</table>

ERC8a: Wide dispersive indoor use of processing aids in open systems  
PROC10: Roller application or brushing  
PROC13: Treatment of articles by dipping and pouring  
PROC17: Lubrication at high energy conditions and in partly open process  
PROC18: Greasing at high energy conditions  
PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems  
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  
1. Short title of Exposure Scenario: Industrial use, Use as additive in plastic, e.g. rubber

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

Environmental Release Categories: ERC5, ERC6c, ERC6d: Industrial use resulting in inclusion into or onto a matrix, Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Process categories:
- 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
- PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC10: Roller application or brushing
- PROC13: Treatment of articles by dipping and pouring
- PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation
- PROC15: Use as laboratory reagent

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): 100 ton(s)/year
- Fraction of EU tonnage used in region: 100 %
- Fraction of Regional tonnage used locally: 1 %
- Daily amount per site: 10 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: 100
- Emission or Release Factor: Air: 0 %
DIETHANOLAMINE (DEA)

Emission or Release Factor: Water: 0.002 %
Emission or Release Factor: Soil: 0 %

Technical conditions and measures / Organizational measures
Exposure time: Continuous use/release
Compartment: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96 %
Sludge Treatment: Sludge should be incinerated., No application to soil.

Conditions and measures related to external treatment of waste for disposal

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): 100 ton(s)/year
Fraction of EU tonnage used in region: 100 %
Fraction of Regional tonnage used locally: 1 %
Daily amount per site: 50 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: 0 %
Emission or Release Factor: Water: 0.002 %
Emission or Release Factor: Soil: 0 %

Technical conditions and measures / Organizational measures
Exposure time: Continuous use/release
Compartment: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant
Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96%
Sludge Treatment: Sludge should be incinerated., No application to soil.

Conditions and measures related to external treatment of waste for disposal

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 25 %
Physical Form (at time of use): liquid

Amount used
Amount used: 22.5 l
Application rate: 0.75 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC7: Industrial spraying
Activity: Spraying

Product characteristics:
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 10%.
- Physical Form (at time of use): liquid

Amount used:
- Amount used: 540 l
- Application rate: 3 L/min

Frequency and duration of use:
- Exposure duration: < 480 min
- Remarks: Inhalation
- Exposure duration (per shift): < 180 min
- Remarks: Dermal
- Frequency of use: <= 240 days/year

Remarks:
- In inhalation exposure:
- Exposure duration (per shift): < 180 min
- Remarks: Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management:
- Dermal exposure: Both hands plus forearms (1500 cm²).

Other operational conditions affecting workers exposure:
- Outdoor / Indoor: Indoor
- Room size: 300 m³
- Temperature: 20 °C
- Ventilation rate per hour: 3
  - Spraying with high compressed air use, Ensure that direction of application is only horizontal or downward., Ensure that the distance from worker to task is greater than 1 m.

Technical conditions and measures:
- Complete segregation with ventilation and filtration of recirculated air (Effectiveness (of a measure): 90 %)

Organisational measures to prevent/limit releases, dispersion and exposure:
- Assumes a good basic standard of occupational hygiene is implemented
- Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation:
- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
- Wear suitable face shield.
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 in Mixture/Article: Covers the percentage of the substance in the product up to 25 %
Physical Form (at time of use): liquid

Amount used
Amount used: 30 l
Application rate: 0.5 L/min

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 60 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm2)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
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 25 %
Physical Form (at time of use): liquid

Amount used
Amount used: 2.25 l
Application rate: 0.05 L/min
Frequency and duration of use

Exposure duration: < 480 min
Remarks: Inhalation

Exposure duration (per shift): < 45 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm²)

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

Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture 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 25 %
Physical Form (at time of use): liquid

Frequency and duration of use

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

Human factors not influenced by risk management

Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
<td>Covers percentage substance in the product up to 10%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
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</tbody>
</table>

<table>
<thead>
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<tbody>
<tr>
<td>Amount used</td>
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</tr>
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<td>Remarks</td>
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<td>Surface area</td>
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<tr>
<td>Remarks</td>
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<table>
<thead>
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<tbody>
<tr>
<td>Exposure duration</td>
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<td>Remarks</td>
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<tr>
<td>Exposure duration (per shift)</td>
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<tr>
<td>Frequency of use</td>
<td>&lt;= 240 days/year</td>
</tr>
</tbody>
</table>

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Room size: 300 m3
Temperature: 20 °C
Ventilation rate per hour: 3:
Ensure that direction of application is only downward., Use long handled tools.

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.
2.9 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

**Product characteristics**

- **Concentration of the Substance in Mixture/Article**: Covers percentage substance in the product up to 10%.
- **Physical Form (at time of use)**: liquid

**Frequency and duration of use**

- **Exposure duration**: < 480 min
- **Remarks**: Inhalation
- **Exposure duration (per shift)**: < 20 min
- **Remarks**: Dermal
- **Frequency of use**: <= 240 days/year

**Human factors not influenced by risk management**

- **Breathing volume**: 10 m³/day

**Other operational conditions affecting workers exposure**

- **Outdoor / Indoor**: Indoor
- **Room size**: 300 m³
- **Ventilation rate per hour**: 3
  - *Ensure that the distance from worker to task is greater than 1 m.*

**Technical conditions and measures**

- Local exhaust ventilation

**Organisational measures to prevent/limit releases, dispersion and exposure**

- Assumes a good basic standard of occupational hygiene is implemented
- Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

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

- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- 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: PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

**Product characteristics**

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

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

Human factors not influenced by risk management
   Dermal exposure : Palms of both hands (480 cm2)

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
   Avoid skin contact.
   Wear suitable coveralls to prevent exposure to the skin.
   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: 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 25 %.
   Physical Form (at time of use) : liquid

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

Human factors not influenced by risk management
   Dermal exposure : Palm of one hand (240 cm2)

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
   Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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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<thead>
<tr>
<th>Environment</th>
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<tbody>
<tr>
<td>Contributing Scenario</td>
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<table>
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<tr>
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<tr>
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</tr>
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<td>Procedure</td>
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</tr>
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<td>PROC7</td>
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<td>PROC9</td>
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<tr>
<td>ECETOC TRA</td>
</tr>
<tr>
<td>PROC15</td>
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<tr>
<td>ECETOC TRA</td>
</tr>
</tbody>
</table>

ERC5: Industrial use resulting in inclusion into or onto a matrix
ERC6c: Industrial use of monomers for manufacture of thermoplastics
ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15: Use as laboratory reagent
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
PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

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

For further information, please also consult our Internet site: Downstream Users http://guidance.echa.europa.eu/downstream_users_en.htm
1. Short title of Exposure Scenario: Professional use, Use as additive in plastic, e.g. rubber

Main User Groups: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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

Process categories: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10: Roller application or brushing
PROC11: Non industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15: Use as laboratory reagent

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

Amount used
Regional use tonnage (tonnes/year): 100 ton(s)/year
Fraction of EU tonnage used in region: 10 %
Fraction of Regional tonnage used locally: 0.2 %
Daily amount per site: 0.054795 kg/day

Environment factors not influenced by risk management
Dilution Factor (River): 10
Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure
Number of emission days per year: 365
Emission or Release Factor: Air: 15 %
Emission or Release Factor: Water: 1 %
Emission or Release Factor: Soil: 0.5 %

Technical conditions and measures / Organizational measures
DIETHANOLAMINE (DEA)

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

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant

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

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

Amount used
Amount used: 22.5 l
Application rate: 0.75 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 30 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 25%.
Physical Form (at time of use): liquid

Amount used
Amount used: 30 l
Application rate: 0.5 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 60 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: 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 25%.
Physical Form (at time of use): liquid

Amount used
Amount used: 2.25 l
Application rate: 0.05 L/min

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 45 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.

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

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 10%
Physical Form (at time of use): liquid

Amount used
Amount used: 0.8 l
Application rate: 0.08 L/min
Remarks: Dermal
Surface area: 3 m²/hour
Remarks: maximum

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 10 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers' exposure
Outdoor / Indoor: Indoor
Room size: 30 m³
Temperature: 20 °C
Ventilation rate per hour: 1
Ensure that direction of application is only downward.
Use long handled tools.

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Wear respiratory protection. (Effectiveness (of a measure): 90 %)
Use suitable eye protection.

2.6 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 10%.
Physical Form (at time of use): liquid

Amount used
Amount used: 0.9 l
Application rate: 0.3 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 3 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands plus forearms (1500 cm2).

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Room size: 30 m3
Temperature: > 20 °C
Ventilation rate per hour: 10 - 15

Technical conditions and measures
Spraying with high compressed air use
Ensure that the direction of airflow is clearly away from the worker.
Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
Wear respiratory protection. (Effectiveness (of a measure): 98 %)
Wear suitable face shield.

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

Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 10%
Physical Form (at time of use) : liquid

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Application duration : 20 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Ensure adequate ventilation.
Ensure that the distance from worker to task is greater than 1 m.

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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: PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

Product characteristics
<table>
<thead>
<tr>
<th>Concentration of the Substance in Mixture/Article</th>
<th>Covers the percentage of the substance in the product up to 25 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

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

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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

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

Product characteristics
<table>
<thead>
<tr>
<th>Concentration of the Substance in Mixture/Article</th>
<th>Covers the percentage of the substance in the product up to 25 %</th>
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</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

Frequency and duration of use
| Exposure duration | < 480 min |
| Remarks           | Inhalation, Dermal |
| Frequency of use  | <= 240 days/year |
Human factors not influenced by risk management
Dermal exposure : Palm of one hand (240 cm²)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartmen</th>
<th>Value</th>
<th>Level of Exposure</th>
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<tbody>
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<td>EUSES</td>
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Workers

<table>
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<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.10952 mg/m³</td>
<td>0.08692</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.071 mg/kg bw/day</td>
<td>0.54615</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
<td>------------------</td>
<td>--------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>RIS_</td>
<td></td>
<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.75385</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.10952 mg/kg bw/day</td>
<td>0.08692</td>
<td></td>
</tr>
<tr>
<td>RIS_</td>
<td></td>
<td>Long term dermal</td>
<td>0.079 mg/kg bw/day</td>
<td>0.60769</td>
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<tr>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.051 mg/m³</td>
<td>0.04048</td>
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<tr>
<td>RIS_</td>
<td></td>
<td>Long term dermal</td>
<td>0.088 mg/kg bw/day</td>
<td>0.67692</td>
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<tr>
<td>PROC11</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.280 mg/m³</td>
<td>0.22222</td>
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<tr>
<td>RIS_</td>
<td></td>
<td>Long term dermal</td>
<td>0.076 mg/kg bw/day</td>
<td>0.58462</td>
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<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.04381 mg/m³</td>
<td>0.03477</td>
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<tr>
<td>RIS_</td>
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<td>Long term dermal</td>
<td>0.098 mg/kg bw/day</td>
<td>0.75385</td>
<td></td>
</tr>
<tr>
<td>PROC14</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.10952 mg/m³</td>
<td>0.08692</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.06571 mg/kg bw/day</td>
<td>0.65934</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.10952 mg/m³</td>
<td>0.08692</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.00857 mg/kg bw/day</td>
<td>0.06593</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
PROC10: Roller application or brushing
PROC11: Non industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC14: Production of preparations or articles by tablettin, compression, extrusion, pelletisation
PROC15: Use as laboratory reagent
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
1. Short title of Exposure Scenario: Industrial use, Processing aid for paper, textile, leather

| 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 | PROC2: Use in closed, continuous process with occasional controlled exposure |
| | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises |
| | PROC6: Calendering operations |
| | PROC7: Industrial spraying |
| | PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| | PROC10: Roller application or brushing |
| | PROC13: Treatment of articles by dipping and pouring |

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): 100 ton(s/year) |
| Fraction of EU tonnage used in region: 10 % |
| Fraction of Regional tonnage used locally: 1 % |
| Daily amount per site: 5 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 % |
| Emission or Release Factor: Water: 99 % |
| Emission or Release Factor: Soil: 1 % |
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

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant
Percentage removed from waste water: 96%
Sludge Treatment: Sludge should be incinerated.

2.2 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 percentage substance in the product up to 7.5%
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
Dermal exposure: Palms of both hands (480 cm²)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness of a measure): 90%
In case of exposure:
Use suitable eye protection.

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

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 7.5%
Physical Form (at time of use): liquid
Frequency and duration of use

Exposure duration: < 480 min
Remarks: Inhalation

Exposure duration (per shift): < 10 min
Remarks: Dermal

Frequency of use: <= 240 days/year

Human factors not influenced by risk management

Dermal exposure: Palms of both hands (480 cm²)

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

Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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 in Mixture/Article: Covers percentage substance in the product up to 7.5%
Physical Form (at time of use): liquid

Frequency and duration of use

Exposure duration: < 480 min
Remarks: Inhalation, Dermal

Frequency of use: <= 240 days/year

Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm²)

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
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
Use suitable eye protection.

2.5 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 7.5%
Physical Form (at time of use): liquid

Amount used
Amount used: 54 l
Application rate: 0.3 L/min
Remarks: Dermal

Frequency and duration of use
Exposure duration: < 480 min
Remarks: Inhalation
Exposure duration (per shift): < 180 min
Remarks: Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Both hands plus forearms (1500 cm2).

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Room size: 300 m3
Temperature: 20 °C
Ventilation rate per hour: 3

Technical conditions and measures
Ensure fixed capturing hood is used. (Effectiveness (of a measure): 90 %)
Ensure that direction of application is only downward.
Ensure that the distance from worker to task is greater than 1 m.
Spraying with high compressed air use
Ensure that the direction of airflow is clearly away from the worker.

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
training. (Effectiveness (of a measure): 95 %)
Wear suitable face shield.

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance</td>
</tr>
<tr>
<td>in Mixture/Article</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency of use</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal exposure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other operational conditions affecting workers exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor / Indoor</td>
</tr>
</tbody>
</table>

Organisational measures to prevent / limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
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

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance</td>
</tr>
<tr>
<td>in Mixture/Article</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure duration</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency of use</td>
</tr>
</tbody>
</table>
Human factors not influenced by risk management

Dermal exposure: Both hands (960 cm²)

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

Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

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

Product characteristics

Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 7.5%
Physical Form (at time of use): liquid

Frequency and duration of use

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

Human factors not influenced by risk management

Dermal exposure: Palms of both hands (480 cm²)

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

Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %)
In case of exposure:
Use suitable eye protection.
2.9 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 7.5%
- Physical Form (at time of use): liquid

Amount used
- Amount used: 22.5 l
- Application rate: 0.25 L/min
- Remarks: Dermal
- Surface area: 3 m²/hour
- Remarks: minimum

Frequency and duration of use
- Exposure duration: < 480 min
- Remarks: Inhalation
- Exposure duration (per shift): < 90 min
- Remarks: Dermal
- Frequency of use: <= 240 days/year

Human factors not influenced by risk management
- Dermal exposure: Both hands (960 cm²)

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Room size: 300 m³
- Temperature: 20 °C
- Ventilation rate per hour: 3

Technical conditions and measures
- Ensure that direction of application is only downward.
- Use long handled tools.

Organisational measures to prevent/limit releases, dispersion and exposure
- Assumes a good basic standard of occupational hygiene is implemented
- Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
- Use suitable eye protection.
2.10 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 7.5%
- Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
- Dermal exposure: Palms of both hands (480 cm²)

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
- Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
- Use suitable eye protection.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartiment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
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</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>ERC4</td>
<td>EUSES</td>
<td>Fresh water</td>
<td>0.01002 mg/L</td>
<td>0.50111</td>
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<td>Fresh water sediment</td>
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<td>0.05462 mg/kg dry weight</td>
<td>0.59372</td>
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<tr>
<td>Marine water</td>
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<td></td>
<td>0.00100 mg/L</td>
<td>0.50096</td>
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<tr>
<td>Marine sediment</td>
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<td></td>
<td>0.00546 mg/kg dry weight</td>
<td>0.59353</td>
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<tr>
<td>Soil</td>
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<td></td>
<td>0.00017 mg/kg dry</td>
<td>0.00011</td>
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<td></td>
</tr>
</tbody>
</table>
### DIETHANOLAMINE (DEA)

**Workers**

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.01029 mg/kg bw/day</td>
<td>0.07912</td>
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</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.05143 mg/kg bw/day</td>
<td>0.39560</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
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<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.10286 mg/kg bw/day</td>
<td>0.79121</td>
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<tr>
<td>PROC7</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.057 mg/m³</td>
<td>0.04524</td>
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<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.066 mg/kg bw/day</td>
<td>0.50769</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
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<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.05143 mg/kg bw/day</td>
<td>0.39560</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.05143 mg/kg bw/day</td>
<td>0.39560</td>
<td></td>
</tr>
<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.05143 mg/kg bw/day</td>
<td>0.39560</td>
<td></td>
</tr>
<tr>
<td>PROC10</td>
<td>ART</td>
<td>Long term inhalation</td>
<td>0.064 mg/m³</td>
<td>0.05079</td>
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<tr>
<td></td>
<td>RISKOFDERM</td>
<td>Long term dermal</td>
<td>0.074 mg/kg bw/day</td>
<td>0.56923</td>
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<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.03286 mg/m³</td>
<td>0.02608</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.05143 mg/kg</td>
<td>0.39560</td>
<td></td>
</tr>
</tbody>
</table>

**Sewage treatment plant**

| weight | 0.099 mg/L | 0.00099 |
| PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises |
| PROC7: Industrial spraying |
| PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities |
| PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities |
| PROC9: Transfer of substance or mixture 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
1. Short title of Exposure Scenario: Industrial use, Laboratory Reagents

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:
- PROC15: Use as laboratory reagent

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: 100 ton(s)/year
- Fraction of EU tonnage used in region: 100%
- Fraction of Regional tonnage used locally: 0.0365%
- Daily amount per site: 1.825 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: 2.5%
- Emission or Release Factor: Water: 2%
- Emission or Release Factor: Soil: 0.010%

Remarks: ESVOC SPERC 4.24.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

Conditions and measures related to municipal sewage treatment plant:
- Type of Sewage Treatment Plant: Municipal sewage treatment plant
- Percentage removed from waste water: 96%

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent
DIETHANOLAMINE (DEA)

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 30%.
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
Dermal exposure: Palm of one hand (240 cm2)

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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartme nt</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC4</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.000196 mg/L</td>
<td>0.00978</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.001066 mg/kg dry weight</td>
<td>0.01159</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td>0.00963</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>0.000105 mg/kg dry weight</td>
<td>0.01141</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td>0.000262 mg/kg dry weight</td>
<td>0.00016</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>0.00073 mg/L</td>
<td>&lt; 0.0001</td>
<td></td>
</tr>
</tbody>
</table>
## Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.13142 mg/m³</td>
<td>0.10430</td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.01029 mg/kg bw/day</td>
<td>0.07912</td>
<td></td>
</tr>
</tbody>
</table>

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles  
PROC15: Use as laboratory reagent

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
1. Short title of Exposure Scenario: Professional use, Laboratory Reagents

### Main User Groups
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

### Environmental Release Categories
ERC8a: Wide dispersive indoor use of processing aids in open systems

### Process categories
PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

#### Amount used
- Regional use tonnage: 100 ton(s)/year
- Fraction of EU tonnage used in region: 10%
- Fraction of Regional tonnage used locally: 0.05%
- Daily amount per site: 0.0137 kg/day

#### Environment factors not influenced by risk management
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

#### Other given operational conditions affecting environmental exposure
- Number of emission days per year: 365
- Emission or Release Factor: Air: 50%
- Emission or Release Factor: Water: 50%
- Emission or Release Factor: Soil: 0%

#### Remarks
- ESVOC SpERC 8.17.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

#### Conditions and measures related to municipal sewage treatment plant
- Type of Sewage Treatment Plant: Municipal sewage treatment plant

2.3 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 30%.
Physical Form (at time of use): liquid

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

Human factors not influenced by risk management
- Dermal exposure: Palm of one hand (240 cm²)

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
- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- 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

<table>
<thead>
<tr>
<th>Environment</th>
<th>Contributing Scenario</th>
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<th>Compartmen</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ERC8a</td>
<td>EUSES</td>
<td>Fresh water</td>
<td></td>
<td>0.00017 mg/L</td>
<td>0.00830</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.00090 mg/kg dry weight</td>
<td>0.00983</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>&lt; 0.0001 mg/L</td>
<td>0.00814</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>&lt; 0.0001 mg/kg dry weight</td>
<td>0.00965</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td>0.00019 mg/kg dry weight</td>
<td>0.00012</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>0.00043 mg/L</td>
<td>&lt; 0.0001</td>
<td></td>
</tr>
</tbody>
</table>
## Workers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
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<tbody>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Long term inhalation</td>
<td>0.13142 mg/m³</td>
<td>0.10430</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECETOC TRA</td>
<td>Long term dermal</td>
<td>0.01029 mg/kg bw/day</td>
<td>0.07912</td>
<td></td>
</tr>
</tbody>
</table>

ERC8a: Wide dispersive indoor use of processing aids in open systems
PROC15: Use as laboratory reagent

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
1. Short title of Exposure Scenario: Industrial use, Use in oil and gas field drilling and production operations

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: 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 mixture into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

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): 150 ton(s)/year
- Fraction of EU tonnage used in region: 100 %
- Fraction of Regional tonnage used locally: 100 %
- Daily amount per site: 45 kg/day

Environment factors not influenced by risk management
- Dilution Factor (River): 100
- Dilution Factor (Coastal Areas): 1,000

Other given operational conditions affecting environmental exposure
- Number of emission days per year: 30
- Emission or Release Factor: Air: 0.01 %
- Emission or Release Factor: Water: 7 %
- Emission or Release Factor: Soil: 0 %
- Remarks: ESVOC SPERC 4.5a.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

2.2 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: < 480 min
Remarks: Inhalation, Dermal
Frequency of use: <= 240 days/year

Human factors not influenced by risk management
Dermal exposure: Palm of one hand (240 cm2)

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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

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

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

Amount used
Amount used: 15 l
Application rate: 0.75 L/min
Remarks: Dermal
DIETHANOLAMINE (DEA)

Frequency and duration of use
- **Exposure duration**: < 480 min
- **Remarks**: Inhalation

Exposure duration (per shift)
- **< 20 min**
- **Remarks**: Dermal
- **Frequency of use**: <= 240 days/year

Human factors not influenced by risk management
- **Dermal exposure**: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
- **Outdoor / Indoor**: Indoor

Technical conditions and measures
- Local exhaust ventilation (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
- Avoid skin contact.
- Wear suitable coveralls to prevent exposure to the skin.
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
- Use suitable eye protection.

2.4 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

Amount used
- **Amount used**: 15 l
- **Application rate**: 0.75 L/min
- **Remarks**: Dermal

Frequency and duration of use
- **Exposure duration**: < 480 min
- **Remarks**: Inhalation
- **Exposure duration**: < 20 min
- **Remarks**: Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
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 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

Amount used
Amount used : 15 l
Application rate : 0.5 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 30 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm²)

Other operational conditions affecting workers exposure
DIETHANOLAMINE (DEA)

Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 %)

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Conditions and measures related to personal protection, hygiene and health evaluation
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
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

Amount used
Amount used : 1.5 l
Application rate : 0.05 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 30 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Both hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 95 %)
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
Avoid skin contact.
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %)
In case of exposure:
Use suitable eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture 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

Amount used
Amount used : 15 l
Application rate : 0.25 L/min
Remarks : Dermal

Frequency and duration of use
Exposure duration : < 480 min
Remarks : Inhalation
Exposure duration (per shift) : < 60 min
Remarks : Dermal
Frequency of use : <= 240 days/year

Human factors not influenced by risk management
Dermal exposure : Palms of both hands (480 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor

Technical conditions and measures
Local exhaust ventilation (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
Avoid skin contact. 
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %) 
In case of exposure:; 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: < 480 min
Remarks: Inhalation, Dermal
Frequency of use: <= 240 days/year

Remarks
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
Avoid skin contact.
Wear suitable coveralls to prevent exposure to the skin.
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

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
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<th>Specific conditions</th>
<th>Compartmen t</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
</table>

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### ERC4 | EUSES | Fresh water | Value | Level of Exposure | RCR  
--- | --- | --- | --- | --- | ---  
 | | | 0.00012 mg/L |  |  |  
 | | Fresh water sediment | 0.00067 mg/kg dry weight |  | 0.00727 |  
 | | Marine water | 0.00159 mg/L |  | 0.79346 |  
 | | Marine sediment | 0.00865 mg/kg dry weight |  | 0.94007 |  
 | | Soil | 0.00017 mg/kg dry weight |  | 0.00011 |  
 | | Sewage treatment plant | 0 mg/L |  | 0 |  

### Workers

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value | Level of Exposure | RCR  
--- | --- | --- | --- | --- | ---  
| PROC3 | ECETOC TRA | Long term inhalation | 0.43807 mg/m³ | 0.34767 |  
| | ECETOC TRA | Long term dermal | 0.03429 mg/kg bw/day | 0.26374 |  
| PROC4 | ECETOC TRA | Long term inhalation | 0.04381 mg/m³ | 0.03477 |  
| RISKOFDERM | | Long term dermal | 0.095 mg/kg bw/day | 0.73077 |  
| PROC5 | ECETOC TRA | Long term inhalation | 0.04381 mg/m³ | 0.03477 |  
| RISKOFDERM | | Long term dermal | 0.095 mg/kg bw/day | 0.73077 |  
| PROC8a | ECETOC TRA | Long term inhalation | 0.04381 mg/m³ | 0.03477 |  
| RISKOFDERM | | Long term dermal | 0.098 mg/kg bw/day | 0.75385 |  
| PROC8b | ECETOC TRA | Long term inhalation | 0.02190 mg/m³ | 0.01738 |  
| RISKOFDERM | | Long term dermal | 0.106 mg/kg bw/day | 0.81539 |  
| PROC9 | ECETOC TRA | Long term inhalation | 0.04381 mg/m³ | 0.03477 |  
| RISKOFDERM | | Long term dermal | 0.103 mg/kg bw/day | 0.79231 |  
| PROC15 | ECETOC TRA | Long term inhalation | 0.04381 mg/m³ | 0.03477 |  
| ECETOC TRA | | Long term dermal | 0.03429 mg/kg bw/day | 0.26374 |  

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ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
PROC15: Use as laboratory reagent
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 mixture 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