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

1.1 Product identifier
   Trade name: DIETHYLENETRIAMINE (DETA)
   Substance name: Diethylenetriamine

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Use of the Substance/Mixture: Specific use(s): Various industrial applications

1.3 Details of the supplier of the safety data sheet
   Company: Nouryon
   Functional Chemicals AB
   SE 444 85 Stenungsund
   Sweden
   Telephone: +4630385000
   Telefax: +46303770551
   E-mail address: QTS@nouryon.com

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

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
   Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)
DIETHYLENETRIAMINE (DETA)

2.2 Label elements


Pictogram:

Signal word: Danger

Hazard statements:
- H302 + H312 Harmful if swallowed or in contact with skin.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H330 Fatal if inhaled.
- H335 May cause respiratory irritation.

Precautionary statements:

Prevention:
- P260 Do not breathe mist, vapours or spray.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
- 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.

Storage:
- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Hazardous components which must be listed on the label:
- Diethylenetriamine 111-40-0
2.3 Other hazards

No further data available.

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

3.1 Substances

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

Hazardous substance

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylenetriamine</td>
<td>111-40-0</td>
<td>203-865-4</td>
<td>Acute Tox. 4; H302 Acute Tox. 2; H330 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317 STOT SE 3; H335</td>
<td>&gt;= 90 - &lt;= 100</td>
</tr>
</tbody>
</table>

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice: Immediate medical attention is required.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.

If inhaled: If breathed in, move person into fresh air.
Call a physician or poison control centre immediately.
Remove to fresh air.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.

In case of skin contact: Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If skin irritation persists, call a physician.

In case of eye contact: Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
DIETHYLENETRIAMINE (DETA)

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

4.2 Most important symptoms and effects, both acute and delayed

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

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

4.3 Indication of any immediate medical attention and special treatment needed

Treatment:
Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting / Specific hazards arising from the chemicalCombustion products:
Do not allow run-off from fire fighting to enter drains or water courses.

Combustion products:
Carbon oxides
Nitrogen oxides (NOx)

5.3 Advice for firefighters

Special protective equipment for firefighters:
In the event of fire, wear self-contained breathing apparatus.

Further information:
Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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.

Emergency measures on accidental release:
Evacuate personnel to safe areas.
Only qualified personnel equipped with suitable protective
6.2 Environmental precautions

Environmental precautions: Do not flush into surface water or sanitary sewer system. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

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

6.4 Reference to other sections

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

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling: Persons with a history of skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

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

7.2 Conditions for safe storage, including any incompatibilities

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

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

7.3 Specific end use(s)

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
</table>

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Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.

Derived No Effect Level (DNEL):

<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>Diethylenetriamine</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>15.4 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>92.1 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects</td>
<td>0.87 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects</td>
<td>2.6 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>11.4 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term local effects</td>
<td>1.1 mg/cm2</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>4.6 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>27.5 mg/m3</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>4.88 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>Acute systemic effects</td>
<td>4.88 mg/kg bw/day</td>
</tr>
</tbody>
</table>

Predicted No Effect Concentration (PNEC):

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylenetriamine</td>
<td>Fresh water</td>
<td>0.56 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.056 mg/l</td>
</tr>
<tr>
<td></td>
<td>Intermittent water</td>
<td>0.32 mg/l</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>6 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>1072 mg/kg dry weight</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>107.2 mg/kg dry weight</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>7.97 mg/kg dry weight</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

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

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

Hand protection
Material : butyl-rubber
Break through time : > 30 min
DIETHYLENETRIAMINE (DETA)

Glove thickness: \( \geq 0.2 \text{ mm} \)
Wearing time: \(< 30 \text{ min} \)
Remarks: Wearing time< 30 minutes

Material: butyl-rubber
Break through time: \( > 240 \text{ min} \)
Glove thickness: \( \geq 0.6 \text{ mm} \)
Wearing time: \(< 240 \text{ min} \)
Remarks: Wearing time< 240 minutes

Material: butyl-rubber
Break through time: \( > 480 \text{ min} \)
Glove thickness: \( \geq 0.8 \text{ mm} \)
Wearing time: \(< 480 \text{ min} \)
Remarks: Wearing time< 480 minutes

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

Skin and body protection: Protective suit
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).
No personal respiratory protective equipment normally required.
Hygiene measures: Avoid contact with skin, eyes and clothing.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.

Environmental exposure controls
General advice: Do not flush into surface water or sanitary sewer system.
Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Physical state: Clear liquid
Colour: colourless
Odour: ammoniacal

Odour Threshold: No data available

Melting point/range: -39 °C (1,013 hPa)

Boiling point/boiling range: 207 °C (1,013 hPa)

Flammability (solid, gas): Not applicable

Upper explosion limit / Upper flammability limit: 10 %(V)

Lower explosion limit / Lower flammability limit: 1 %(V)

Flash point: 96.7 °C (1,013 hPa)
Method: Pensky-Martens closed cup

Decomposition temperature: No data available

pH: 12 (20 °C)
Concentration: 100 g/l

Viscosity
Viscosity, dynamic: 5.05 mPa.s (20 °C)

Viscosity, kinematic: No data available

Solubility(ies)
Water solubility: soluble

Solubility in other solvents: Soluble in alcohols and hydrocarbons.

Partition coefficient: n-octanol/water
log Pow: -1.58 (20 °C)

Vapour pressure: 0.2 hPa (20 °C)

Relative density: 0.959 (20 °C)

Density: 0.957 g/cm³ (20 °C)

Relative vapour density: 3.6

9.2 Other information

Explosives: Not explosive

Oxidizing properties: The substance or mixture is not classified as oxidizing.
DIETHYLENETRIAMINE (DETA)

Flammability (liquids) : Not classified as a flammability hazard
Self-ignition : 358 °C
                 1,013 hPa
Evaporation rate : No data available

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

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
Stable under normal conditions.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Heating can release hazardous gases.

10.4 Conditions to avoid
Conditions to avoid : Extremes of temperature and direct sunlight.

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

10.6 Hazardous decomposition products
Hazardous decomposition products : Nitrogen oxides (NOx)
Thermal decomposition : No data available

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Product information:
Acute toxicity : Harmful if swallowed or in contact with skin.
                Fatal if inhaled.
Skin corrosion/irritation : Causes severe burns.
Serious eye damage/eye irritation : Causes serious eye damage.
Respiratory or skin sensitisation : Respiratory sensitisation: Not classified based on available information.
                                Skin sensitisation: May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified based on available information.
Carcinogenicity: Not classified based on available information.

Reproductive toxicity: Not classified based on available information.

STOT - single exposure: May cause respiratory irritation.

STOT - repeated exposure: Not classified based on available information.

Aspiration hazard: Not classified based on available information.

Further information: No further data available.

Toxicology data for the components:

**Diethylenetriamine**

**Acute toxicity:**

Acute oral toxicity: LD50: > 300 - 2,000 mg/kg
Species: Rat

Acute inhalation toxicity: LC50 (Rat): > 0.07 - 0.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Skin corrosion/irritation: Result: Causes burns.

Serious eye damage/eye irritation: Result: Risk of serious damage to eyes.

Respiratory or skin sensitisation: Species: Mouse
Result: The product is a skin sensitiser, sub-category 1B.
Method: OECD Test Guideline 429

Germ cell mutagenicity

Genotoxicity in vitro: Ames test
Result: negative

Genotoxicity in vivo: Result: No evidence of genotoxic effects in vivo.

STOT - single exposure: Exposure routes: Inhalation
Target Organs: Respiratory system
May cause respiratory irritation.

**11.2 Information on other hazards**

**Endocrine disrupting properties**

**Product:**

**Assessment:** The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
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.

12.1 Toxicity
Components:
Test result
Diethylenetriamine
Toxicity to fish: LC50: > 100 mg/l
Exposure time: 96 h
Species: Poecilia reticulata (guppy)

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

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

12.2 Persistence and degradability
Product information:
Biodegradability: Result: Readily biodegradable.

Components:
Diethylenetriamine
Biodegradability: Result: Readily biodegradable.

12.3 Bioaccumulative potential
Product information:
Bioaccumulation: Bioaccumulation is unlikely.

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

12.4 Mobility in soil
Product information:
Mobility: Due to its physical and chemical properties, transport between environmental compartments is not expected

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

12.5 Results of PBT and vPvB assessment
Product information:
PBT and vPvB assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
Product information:
Biochemical Oxygen Demand (BOD) : No data available

Components:
Diethylenetriamine
Biochemical Oxygen Demand (BOD) : No data available

SECTION 13: DISPOSAL CONSIDERATIONS
13.1 Waste treatment methods
Product: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local regulation.

Contaminated packaging: Empty remaining contents. Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION
14.1 UN number
ADR : UN 2079
RID : UN 2079
IMDG-Code : UN 2079
IATA-DGR : UN 2079

14.2 Proper shipping name
ADR : DIETHYLENETRIAMINE
RID : DIETHYLENETRIAMINE
IMDG-Code : DIETHYLENETRIAMINE
IATA-DGR : Diethylenetriamine

14.3 Transport hazard class
ADR : 8
RID : 8
IMDG-Code : 8
IATA-DGR : 8
14.4 Packing group

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

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

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

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

14.5 Environmental hazards

ADR
- Environmentally hazardous: no

RID
- Environmentally hazardous: no

IMDG-Code
- Marine pollutant: no

IATA-DGR
- Environmentally hazardous: no

14.6 Special precautions for user
Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

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

Relevant EU provisions transposed through retained EU law

UK REACH List of substances subject to authorisation (Annex XIV): Not applicable

Notification status

TCSI: YES. On the inventory, or in compliance with the inventory
TSCA: YES. All substances listed as active on the TSCA inventory
AIIC : YES. On the inventory, or in compliance with the inventory
DSL : YES. All components of this product are on the Canadian DSL
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
IECS : YES. On the inventory, or in compliance with the inventory
NZIoC : YES. On the inventory, or in compliance with the inventory
TECI : NO. Not in compliance with the inventory

For explanation of abbreviation see section 16.

15.2 Chemical safety assessment

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

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.
H302 : Harmful if swallowed.
H312 : Harmful in contact with skin.
H314 : Causes severe skin burns and eye damage.
H317 : May cause an allergic skin reaction.
H318 : Causes serious eye damage.
H330 : Fatal if inhaled.
H335 : May cause respiratory irritation.

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
ACGIH / TWA : USA. ACGIH Threshold Limit Values (TLV) 8-hour, time-weighted average
GB EH40 / TWA : UK. EH40 WEL - Workplace Exposure Limits Long-term exposure limit (8-hour TWA reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect
Further information

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

Formulation & (re)packing of substances and mixtures

Use as an intermediate

Industrial use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

Industrial use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent

Professional use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

Service life - workers, Professional use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

Professional use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent

Service life - workers, Professional use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent
1. Short title of Exposure Scenario: Formulation & (re)packing of substances and mixtures

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

Environmental Release Categories: ERC2: Formulation into mixture

Process categories:
- PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
- PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
- PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
- PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
- PROC5: Mixing or blending in batch processes
- PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
- PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
- PROC15: Use as laboratory reagent
- PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
- PROC28: Manual maintenance (cleaning and repair) of machinery

2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation into mixture

Amount used
- Daily amount per site: 104.5 tonnes/day
- Annual amount per site: 23000 tonnes/year

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

Other given operational conditions affecting environmental exposure
- Number of emission days per year: 220
- Emission or Release Factor: Air: 0.36 %
- Emission or Release Factor: Water: 0 %
- Emission or Release Factor: Soil: 0 %
- Remarks: FEICA SPERC 2.1b.v3

Technical conditions and measures / Organizational measures
- Exposure time: Continuous use/release
- Compartment: Fresh water, Fresh water sediment, Marine water, Marine sediment, Soil, Sewage treatment plant, Air
DIETHYLENETRIAMINE (DETA)

Air

(Effectiveness (of a measure): 80 %)

Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant: Standard
Flow rate of sewage treatment plant effluent: 2,000 m³/day
Percentage removed from wastewater: 87.34 %

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: No release to wastewater from process as such, wastewater emissions limited to release generated from final equipment cleaning step using water, Process optimized for highly efficient use of raw materials, Equipment cleaned with organic solvent, washings are collected and disposed of as solvent waste.

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Organisational measures to prevent / limit releases, dispersion and exposure

Advanced Occupational Health and Safety Management System, Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

Frequency of use: <= 8 h/day

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DIETHYLENETRIAMINE (DETA)

Remarks
Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor
Indoor
Temperature
<= 70 °C
Remarks
Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.4 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

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

Frequency and duration of use
Frequency of use
<= 8 h/day
Remarks
Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor
Indoor
Temperature
<= 70 °C
Remarks
Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.5 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

Activity
Mixing operations (open systems), Batch process, With sample collection, Opportunity for aerosol 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).
DIETHYLENETRIAMINE (DETA)

Physical Form (at time of use) : liquid

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.6 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

Activity : Mixing operations (open systems), Opportunity for aerosol 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
Frequency of use : <= 4 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): \( \geq 95\% \))
Use suitable eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC8b, PROC9: Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Material transfers, Dedicated facility</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 100 % (unless stated differently).</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>Frequency of use</td>
<td>( \leq 4 \text{ h/day} )</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>( \leq 40 , ^\circ \text{C} )</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
<tr>
<td>Technical conditions and measures</td>
<td></td>
</tr>
<tr>
<td>(Effectiveness (of a measure): 90 - 95 %)</td>
<td></td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of the Substance in Mixture/Article</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
<tr>
<td>Frequency of use</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>
Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

Technical conditions and measures
- Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
- Ensure fixed capturing hood is used.
- Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.9 Contributing scenario controlling worker exposure for: PROC8a, PROC28: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

<table>
<thead>
<tr>
<th>Activity</th>
<th>Equipment cleaning and maintenance</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 100 % (unless stated differently).</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Indoor</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
- Advanced Occupational Health and Safety Management System
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
- Wear respiratory protection., APF 10
- 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>Compartments</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC2</td>
<td>EUSES v2.1</td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>0.00253 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>0.0095 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>Marine water</td>
<td>0.000237 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>Marine water</td>
<td>0.000891 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment</td>
<td>Fresh water</td>
<td>0 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plant</td>
<td>Soil</td>
<td>0.019 mg/kg dry weight</td>
<td>&lt; 0.01</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>Worker - inhalative, long-term</td>
<td>0.043 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term</td>
<td>0.034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term</td>
<td>0.069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term</td>
<td>12.89 mg/m³</td>
<td>0.837</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term</td>
<td>0.034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term</td>
<td>2.149 mg/m³</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term</td>
<td>0.343 mg/kg bw/day</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

<table>
<thead>
<tr>
<th>PROC</th>
<th>ECETOC TRA</th>
<th>long-term - systemic</th>
<th>Worker - inhalative, long-term - systemic</th>
<th>Worker - dermal, long-term - systemic</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td></td>
<td></td>
<td>1.29 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.084</td>
</tr>
<tr>
<td>PROC8b</td>
<td>PROC9</td>
<td></td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td></td>
<td></td>
<td>2.149 mg/m³</td>
<td>0.017 mg/kg bw/day</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>PROC8a</td>
<td>PROC28</td>
<td></td>
<td>3.009 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
</tr>
</tbody>
</table>

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

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

---

**ERC2: Formulation into mixture**

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC15: Use as laboratory reagent

PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC28: Manual maintenance (cleaning and repair) of machinery

PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4: Chemical production where opportunity for exposure arises

PROC5: Mixing or blending in batch processes

PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
For further information, please also consult our Internet site: Downstream Users
www.echa.europa.eu/regulations/reach/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: Use of intermediate

Process categories:
- PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
- PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
- PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
- PROC4: Chemical production where opportunity for exposure arises
- PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
- PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
- PROC15: Use as laboratory reagent
- PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
- PROC28: Manual maintenance (cleaning and repair) of machinery

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

Amount used
- Daily amount per site: 7.67 tonnes/day
- Annual amount per site: 23000 tonnes/year
- Fraction of Regional tonnage used locally: 10%

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: 0.25 %
- Emission or Release Factor: Water: 0.02 %
- Emission or Release Factor: Soil: 0.001 %
- Remarks: SpERC

Conditions and measures related to sewage treatment plant
- Type of Sewage Treatment Plant: Standard
- Flow rate of sewage treatment: 2,000 m³/day
plant effluent
Percentage removed from waste water : 87.34 %

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Upgrade of the system in place or additional air treatment measures, such as wet scrubber and/or air filtration and/or thermal oxidation and/or vapour recovery systems, in order to achieve a reduction of the air emissions. No release to wastewater from process as such, wastewater emissions limited to release generated from final equipment cleaning step using water, Process optimized for highly efficient use of raw materials.

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Activity : General exposures, Closed systems, Continuous process
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
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent/limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Activity : General exposures, Closed systems, With sample collection
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : liquid
Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal
DIETHYLENETRIAMINE (DETA)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.4 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Activity</th>
<th>General exposures, Use in contained batch processes, With sample collection</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 100 % (unless stated differently).</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.
2.5 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

**Activity**
- General exposures, Batch process, With sample collection, Open systems

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

**Frequency and duration of use**
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Temperature: <= 70 °C
- Remarks: Operating temperature

**Technical conditions and measures**
- Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
- Ensure fixed capturing hood is used.
- Ensure on-tool extraction is used.

**Organisational measures to prevent/limit releases, dispersion and exposure**
- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
- Use suitable eye protection.

---

2.6 Contributing scenario controlling worker exposure for: PROC8b, PROC9: Transfer of substance or mixture (charging/discharging) at dedicated facilities, Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

**Activity**
- Material transfers, Dedicated facility

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

**Frequency and duration of use**
- Frequency of use: <= 4 h/day
- Remarks: Inhalation, Dermal

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

**Organisational measures to prevent/limit releases, dispersion and exposure**
Advanced Occupational Health and Safety Management System
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

2.7 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
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.8 Contributing scenario controlling worker exposure for: PROC8a, PROC28: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

Activity : Equipment cleaning and maintenance
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
 Physical Form (at time of use) : liquid
### Frequency and duration of use

**Frequency of use**: <= 8 h/day  
**Remarks**: Inhalation, Dermal

### Other operational conditions affecting workers exposure

**Outdoor / Indoor**: Indoor  
**Temperature**: <= 40 °C  
**Remarks**: Operating temperature

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

- Advanced Occupational Health and Safety Management System
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
  *(Effectiveness of a measure): >= 95%)*  
- Wear respiratory protection, APF 10  
- 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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6a</td>
<td>EUSES v2.1</td>
<td>Fresh water</td>
<td></td>
<td>0.012 mg/L</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td></td>
<td>0.046 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td></td>
<td>0.00121 mg/L</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine sediment</td>
<td></td>
<td>0.00454 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td></td>
<td>0.097 mg/L</td>
<td>0.016</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil</td>
<td></td>
<td>0.00375 mg/kg dry weight</td>
<td>&lt; 0.01</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>Worker - inhalative, long-term - systemic</td>
<td>0.043 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.34 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>10.47 mg/m³</td>
<td>0.698</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>------------------------------------------</td>
<td>-------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>12.89 mg/m³</td>
<td>0.837</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.149 mg/m³</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.343 mg/kg bw/day</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>PROC9</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>9.027 mg/m³</td>
<td>0.586</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.149 mg/m³</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.017 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>PROC28</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>3.009 mg/m³</td>
<td>0.195</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
<td></td>
</tr>
</tbody>
</table>

ERC6a: Use of intermediate
PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC15: Use as laboratory reagent
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC28: Manual maintenance (cleaning and repair) of machinery
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4: Chemical production where opportunity for exposure arises
PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
PROC8b: Transfer of substance or mixture (charging/discharging) 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
www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Industrial use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

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

Environmental Release Categories: ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Process categories:
- PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
- PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
- PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
- PROC4: Chemical production where opportunity for exposure arises
- PROC5: Mixing or blending in batch processes
- PROC7: Industrial spraying
- PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
- PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
- PROC10: Roller application or brushing
- PROC13: Treatment of articles by dipping and pouring
- PROC28: Manual maintenance (cleaning and repair) of machinery
- PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Amount used
- Daily amount per site: <= 26.13 tonnes/day
- Annual amount per site: <= 5750 tonnes/year

Environment factors not influenced by risk management
- Flow rate: 18,000 m³/day
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure
- Number of emission days per year: 220
- Emission or Release Factor: Air: 1.7 %
- Emission or Release Factor: Water: 0 %
- Emission or Release Factor: Soil: 0 %
- Remarks: SpERC
Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant: Standard
Flow rate of sewage treatment plant effluent: 2,000 m³/day
Percentage removed from waste water: 87.34 %

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Activity: General exposures (closed systems), Closed systems

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

Frequency and duration of use
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Temperature: <= 70 °C
- Remarks: Operating temperature

Organisational measures to prevent/limit releases, dispersion and exposure
- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
- Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

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

Frequency and duration of use
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Temperature: <= 70 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.4 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Activity
Product characteristics
Concentration of the Substance in Mixture/Article
Physical Form (at time of use)
Frequency and duration of use
Frequency of use
Remarks
Other operational conditions affecting workers exposure
Outdoor / Indoor
Temperature
Remarks
Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.5 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Activity
Product characteristics
Concentration of the Substance in Mixture/Article
Physical Form (at time of use)
Frequency and duration of use
Frequency of use
Remarks

37 / 88
DIETHYLENETRIAMINE (DETA)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.6 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Activity : Injection moulding of articles, Batch process, Closed systems
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : liquid

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.7 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

Activity : Mixing operations (open systems), Opportunity for aerosol exposure
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
### DIETHYLENETRIAMINE (DETA)

**Frequency and duration of use**

<table>
<thead>
<tr>
<th>Frequency of use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= 4 h/day</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Temperature</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor</td>
<td>&lt;= 70 °C</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

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

- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
- Use suitable eye protection.

---

2.8 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Activity</th>
<th>Injection moulding of articles, Foaming, Open systems, Machines, Manual</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 |

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

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Temperature</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor</td>
<td>&lt;= 40 °C</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

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

- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

- Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
- Use suitable eye protection.

---

2.9 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Activity</th>
<th>Film formation - air drying, Open systems</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%.
DIETHYLENETRIAMINE (DETA)

Physical Form (at time of use) : liquid

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.10 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

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

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
Frequency of use : <= 4 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

Activity : Spraying, Automated task, Manual

Product characteristics
DIETHYLENETRIAMINE (DETA)

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
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Technical conditions and measures
Local exhaust ventilation
Use high-performance fume cupboard.
Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.12 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

Activity: Material transfers, Non-dedicated facility

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

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.13 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Material transfers, Dedicated facility, Drum/batch transfers, Transfer from/pouring from containers</th>
</tr>
</thead>
</table>

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 5%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

Frequency and duration of use

<table>
<thead>
<tr>
<th>Frequency of use</th>
<th>&lt;= 8 h/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure

Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Roller, spreader, flow application</th>
</tr>
</thead>
</table>

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 5%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

Frequency and duration of use

<table>
<thead>
<tr>
<th>Frequency of use</th>
<th>&lt;= 8 h/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure

Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Activity**
- Dipping, immersion and pouring

**Product characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</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 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

**Frequency and duration of use**

<table>
<thead>
<tr>
<th>Frequency of use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= 8 h/day</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

**Other operational conditions affecting workers exposure**

- Indoor
- <= 40 °C

- Operating temperature

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

Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

2.16 Contributing scenario controlling worker exposure for: PROC8a, PROC28: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

**Activity**
- Equipment cleaning and maintenance

**Product characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</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 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

**Frequency and duration of use**

<table>
<thead>
<tr>
<th>Frequency of use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= 8 h/day</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

**Other operational conditions affecting workers exposure**

- Indoor
- <= 40 °C

- Operating temperature

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

Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

2.17 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 5%.
Physical Form (at time of use): liquid

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>ERC6d</td>
<td>EUSES v2.1</td>
<td></td>
<td>Fresh water</td>
<td>0.00253 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td></td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.0095 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Marine water</td>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000237 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.000891 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment</td>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td>0.022 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>
## DIETHYLENETRIAMINE (DETA)

### 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>Worker - inhalative, long-term - systemic</td>
<td>0.0086 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.0068 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>General exposures</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.86 mg/m³</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.014 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Aerosol</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.86 mg/m³</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.014 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Preparation of material for application</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.0069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Injection moulding of articles</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.0069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Mixing operations (open systems), Preparation of material for application</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Injection moulding of articles</td>
<td>Worker - inhalative, long-term -</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Activity</td>
<td>Exposure Route</td>
<td>Route of Absorption</td>
<td>Limit</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>----------</td>
<td>----------------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Film formation - air drying, Open systems</td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>4.299 mg/m³</td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Preparation of material for application, Mixing operations (open systems)</td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>2.579 mg/m³</td>
</tr>
<tr>
<td>PROC7</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>12.89 mg/m³</td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>8.597 mg/m³</td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>4.299 mg/m³</td>
</tr>
<tr>
<td>PROC10</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>8.597 mg/m³</td>
</tr>
<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term systemic</td>
<td>Worker - dermal, long-term systemic</td>
<td>8.597 mg/m³</td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

**Worker - dermal, long-term - systemic**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Source</th>
<th>Exposure Route</th>
<th>Short-Term</th>
<th>Long-Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>8.597 mg/m³</td>
<td>0.558</td>
</tr>
<tr>
<td>PROC28</td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.137 mg/kg bw/day</td>
<td>0.012</td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.0034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

**ERC6d:** Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC28: Manual maintenance (cleaning and repair) of machinery

PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4: Chemical production where opportunity for exposure arises

PROC5: Mixing or blending in batch processes

PROC7: Industrial spraying

PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

PROC8b: Transfer of substance or mixture (charging/discharging) 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

www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Industrial use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent

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

Environmental Release Categories : ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Process categories : PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4: Chemical production where opportunity for exposure arises
PROC5: Mixing or blending in batch processes
PROC7: Industrial spraying
PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC28: Manual maintenance (cleaning and repair) of machinery
PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)

Amount used
Daily amount per site : <= 26.13 tonnes/day
Annual amount per site : <= 5750 tonnes/year

Environment factors not influenced by risk management
Flow rate : 18,000 m³/day
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure
Number of emission days per year : 220
Emission or Release Factor: Air : 1.7 %
Emission or Release Factor: Water : 0 %
Emission or Release Factor: Soil : 0 %
Remarks : SpERC
Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant: Standard
Flow rate of sewage treatment plant effluent: 2,000 m³/day
Percentage removed from wastewater: 87.34%

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Activity: General exposures (closed systems)
Product characteristics:
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.
- Physical Form (at time of use): liquid

Frequency and duration of use:
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure:
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure:
- Advanced Occupational Health and Safety Management System
- Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation:
- Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Activity: General exposures (closed systems), With sample collection
Product characteristics:
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.
- Physical Form (at time of use): liquid

Frequency and duration of use:
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure:
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature
DIETHYLENETRIAMINE (DETA)

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.4 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Injection moulding of articles, Batch process, Closed systems</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 50%.</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.5 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Film formation - air drying, Closed systems</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 50%.</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td></td>
</tr>
</tbody>
</table>
**DIETHYLENETRIAMINE (DETA)**

- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

**Organisational measures to prevent /limit releases, dispersion and exposure**
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

### 2.6 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations, Closed systems</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 percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

**Organisational measures to prevent /limit releases, dispersion and exposure**
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

### 2.7 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations (open systems), Opportunity for aerosol exposure</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 percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
</tbody>
</table>
DIETHYLENETRIAMINE (DETA)

Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Technical conditions and measures
Local exhaust ventilation (Effectiveness (of a measure): 90 - 95 %)
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.8 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

Activity : Film formation - air drying, Open systems
Product characteristics
Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 50%.
Physical Form (at time of use) : liquid

Frequency and duration of use
Frequency of use : <= 4 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.9 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes
Activity: Preparation of material for application, Mixing operations (open systems), Opportunity for aerosol exposure

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

Frequency and duration of use:
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure:
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Technical conditions and measures:
Local exhaust ventilation (Effectiveness of a measure): 90 - 95 %
Ensure fixed capturing hood is used.
Ensure on-tool extraction is used.

Organisational measures to prevent/limit releases, dispersion and exposure:
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

Activity: Spraying (automatic/robotic), Manual

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

Frequency and duration of use:
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure:
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Technical conditions and measures:
Local exhaust ventilation (Effectiveness of a measure): >= 95 %
Use high-performance fume cupboard.
Apply within a vented cab supplied with filtered air under positive pressure and with a protection
factor of >20.

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

2.11 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
</table>
| Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 50%.
| Physical Form (at time of use) | liquid |

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of use</td>
<td>&lt;= 4 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

Other operational conditions affecting workers exposure
Outdoor / Indoor | Indoor
Temperature | <= 40 °C
Remarks | Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection and gloves.

2.12 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Material transfers, Dedicated facility, Drum/batch transfers, Transfer from/pouring from containers</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
</table>
| Concentration of the Substance in Mixture/Article | Covers percentage substance in the product up to 50%.
| Physical Form (at time of use) | liquid |

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

Other operational conditions affecting workers exposure
Outdoor / Indoor | Indoor
DIETHYLENETRIAMINE (DETA)

Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

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

Activity: Roller, spreader, flow application
Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.
Physical Form (at time of use): liquid

Frequency and duration of use
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

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

Activity: Dipping, immersion and pouring
Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.
Physical Form (at time of use): liquid

Frequency and duration of use
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
### DIETHYLENETRIAMINE (DETA)

**Organisational measures to prevent /limit releases, dispersion and exposure**
Advanced Occupational Health and Safety Management System
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): >= 95 %)
Use suitable eye protection.

#### 2.15 Contributing scenario controlling worker exposure for: PROC8a, PROC28:
Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

<table>
<thead>
<tr>
<th>Activity</th>
<th>Equipment cleaning and maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td>Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td>Frequency of use: &lt;= 4 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>

**Organisational measures to prevent /limit releases, dispersion and exposure**
Advanced Occupational Health and Safety Management System
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear chemically resistant gloves (tested to EN374) in combination with 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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Laboratory activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product characteristics</td>
<td>Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td>Frequency of use: &lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>
Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Temperature</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor</td>
<td>≤= 40 °C</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure

Advanced Occupational Health and Safety Management System

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

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
(Effectiveness (of a measure): ≥ 95%)
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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6d</td>
<td>EUSES v2.1</td>
<td></td>
<td>Fresh water</td>
<td>0.00253 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.0095 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000237 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.000891 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td>0.022 mg/kg dry weight</td>
<td>&lt; 0.01</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>Worker - inhalative, long-term - systemic</td>
<td>0.043 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>General exposures (closed systems), With sample collection</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker -</td>
<td>0.069 mg/kg</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Notification/Notification</td>
<td>Worker - dermal, long-term - systemic</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>bw/day</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>PROC2</td>
<td>Injection moulding of articles, Batch process</td>
<td>4.299 mg/m³</td>
<td>0.069 mg/kg bw/day</td>
<td>0.069 mg/kg bw/day</td>
<td>0.279</td>
</tr>
<tr>
<td>PROC2</td>
<td>Film formation - air drying</td>
<td>4.299 mg/m³</td>
<td>0.069 mg/kg bw/day</td>
<td>0.069 mg/kg bw/day</td>
<td>0.279</td>
</tr>
<tr>
<td>PROC3</td>
<td>Worker - inhalative, long-term systemic</td>
<td>12.89 mg/m³</td>
<td>0.034 mg/kg bw/day</td>
<td>0.034 mg/kg bw/day</td>
<td>0.837</td>
</tr>
<tr>
<td>PROC4</td>
<td>Preparation of material for application, Mixing operations (open systems)</td>
<td>2.149 mg/m³</td>
<td>0.343 mg/kg bw/day</td>
<td>0.343 mg/kg bw/day</td>
<td>0.14</td>
</tr>
<tr>
<td>PROC4</td>
<td>Film formation - air drying</td>
<td>12.89 mg/m³</td>
<td>0.343 mg/kg bw/day</td>
<td>0.343 mg/kg bw/day</td>
<td>0.29</td>
</tr>
<tr>
<td>PROC5</td>
<td>Worker - inhalative, long-term systemic</td>
<td>1.29 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.686 mg/kg bw/day</td>
<td>0.084</td>
</tr>
<tr>
<td>PROC7</td>
<td>Worker - inhalative, long-term systemic</td>
<td>9.027 mg/m³</td>
<td>2.143 mg/kg</td>
<td>2.143 mg/kg</td>
<td>0.586</td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>Worker - dermal, long-term - systemic</td>
<td>bw/day</td>
<td>Notes</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>PROC8a</td>
<td></td>
<td>7.737 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.502</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td></td>
<td>6.448 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.419</td>
<td></td>
</tr>
<tr>
<td>PROC10</td>
<td></td>
<td>7.737 mg/m³</td>
<td>1.372 mg/kg bw/day</td>
<td>0.502</td>
<td></td>
</tr>
<tr>
<td>PROC13</td>
<td></td>
<td>7.737 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.502</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>PROC28</td>
<td>7.737 mg/m³</td>
<td>0.686 mg/kg bw/day</td>
<td>0.502</td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td></td>
<td>15.04 mg/m³</td>
<td>0.017 mg/kg bw/day</td>
<td>0.977</td>
<td></td>
</tr>
</tbody>
</table>

ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC15: Use as laboratory reagent
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC28: Manual maintenance (cleaning and repair) of machinery
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4: Chemical production where opportunity for exposure arises
PROC5: Mixing or blending in batch processes
PROC7: Industrial spraying
PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
PROC8b: Transfer of substance or mixture (charging/discharging) 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
www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Professional use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

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

Environmental Release Categories : ERC8c, ERC8f: Widespread use leading to inclusion into/onto article (indoor), Widespread use leading to inclusion into/onto article (outdoor)

Process categories :
PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4: Chemical production where opportunity for exposure arises
PROC5: Mixing or blending in batch processes
PROC11: Non-industrial spraying
PROC19: Manual activities involving hand contact
PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC28: Manual maintenance (cleaning and repair) of machinery
PROC15: Use as laboratory reagent

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f: Widespread use leading to inclusion into/onto article (indoor), Widespread use leading to inclusion into/onto article (outdoor)

Amount used
Daily amount per site : 0.00316 tonnes/day

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

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air : 0 %
Emission or Release Factor: Water : 1.5 %
Emission or Release Factor: Soil : 0 %
Remarks : FEICA SPERC 8c.3.v3
Conditions and measures related to sewage treatment plant

Type of Sewage Treatment Plant : Standard
Effectiveness (of a measure) : 87.34 %

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent / limit releases, dispersion and exposure
Advanced Occupational Health and Safety Management System
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Activity : General exposures (closed systems), With sample collection
Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : liquid

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent / limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Use suitable eye protection.

2.4 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Film formation - air drying, Closed systems</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 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.5 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations, Closed systems</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 5%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature
Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.6 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

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

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
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

2.7 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

Activity: Film formation - air drying, Open systems

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

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
DIETHYLENETRIAMINE (DETA)

Temperature : <= 70 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

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

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection., APF 10
Use suitable eye protection.

2.9 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

Activity : Preparation of material for application, Open systems, Opportunity for aerosol exposure
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
Frequency of use : <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

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

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

Frequency and duration of use
Frequency of use: <= 1 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent/limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

2.11 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

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

Frequency and duration of use
**DIETHYLENETRIAMINE (DETA)**

**Frequency of use**
- <= 4 h/day
- Remarks: Inhalation, Dermal

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

**Organisational measures to prevent /limit releases, dispersion and exposure**
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

---

### 2.12 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

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

**Frequency and duration of use**
- Frequency of use: <= 8 h/day
- Remarks: Inhalation, Dermal

**Other operational conditions affecting workers exposure**
- Outdoor / Indoor: Indoor
- Temperature: <= 40 °C
- Remarks: Operating temperature

**Organisational measures to prevent /limit releases, dispersion and exposure**
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

---

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

**Activity**
- Roller, spreader, flow application

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

**Frequency and duration of use**
DIETHYLENETRIAMINE (DETA)

Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

Activity: Production of foam-based objects
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
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.15 Contributing scenario controlling worker exposure for: PROC8a, PROC28: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

Activity: Equipment cleaning and maintenance
Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use): liquid
Frequency and duration of use
Frequency of use : <= 4 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

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

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
</table>

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## DIETHYLENEetriamine (DETA)

### Version 2

**Revision Date 13.12.2021**

**Print Date 20.01.2022**

**GB / EN**

<table>
<thead>
<tr>
<th>ERC8c</th>
<th>ERC8f</th>
<th>EUSES v2.1</th>
<th>Fresh water</th>
<th>Value</th>
<th>&lt; 0.01</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.011 mg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000267 mg/L</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.001 mg/kg dry weight</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0.003 mg/L</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td>0.00228 mg/kg dry weight</td>
<td>&lt; 0.01</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 ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.086 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC1 ECETOC TRA</td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.0068 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA</td>
<td>General exposures (closed systems), With sample collection</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA</td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.027 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA</td>
<td>Film formation - air drying, Closed systems</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>4.299 mg/m³</td>
<td>0.279</td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA</td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.027 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC3 ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
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<td></td>
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<tr>
<td>PROC3 ECETOC TRA</td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.014 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC4 ECETOC TRA</td>
<td>Preparation of material for application, Mixing operations (open systems)</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>3.611 mg/m³</td>
<td>0.234</td>
<td></td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>ECETOC TRA</th>
<th>System / Description</th>
<th>Worker - Inhalative, Long-term - Systemic</th>
<th>Worker - Dermal, Long-term - Systemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Film formation - air drying, Open systems</td>
<td>8.597 mg/m³</td>
<td>0.137 mg/kg bw/day 0.012</td>
</tr>
<tr>
<td>PROC11</td>
<td>ECETOC TRA</td>
<td>Spraying, Manual</td>
<td>6.018 mg/m³</td>
<td>0.137 mg/kg bw/day 0.012</td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
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<td>3.611 mg/m³</td>
<td>0.024</td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td></td>
<td>3.009 mg/m³</td>
<td>0.024</td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td></td>
<td>12.89 mg/m³</td>
<td>0.274 mg/kg bw/day 0.024</td>
</tr>
<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td></td>
<td>8.597 mg/m³</td>
<td>0.274 mg/kg bw/day 0.024</td>
</tr>
<tr>
<td>PROC10</td>
<td>ECETOC TRA</td>
<td></td>
<td>9.027 mg/m³</td>
<td>0.274 mg/kg bw/day 0.024</td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

**Worker - dermal, long-term - systemic**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Source</th>
<th>Activity</th>
<th>Worker - inhalative, long-term - systemic</th>
<th>Worker - dermal, long-term - systemic</th>
<th>0.0549 mg/kg bw/day</th>
<th>0.048</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td></td>
<td></td>
<td></td>
<td>8.597 mg/m³</td>
<td>0.558</td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Equipment cleaning and maintenance</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>Worker - dermal, long-term - systemic</td>
<td>9.027 mg/m³</td>
<td>0.586</td>
</tr>
<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td></td>
<td></td>
<td></td>
<td>4.299 mg/m³</td>
<td>0.279</td>
</tr>
</tbody>
</table>

**Worker - dermal, long-term - systemic**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Source</th>
<th>Activity</th>
<th>Worker - inhalative, long-term - systemic</th>
<th>Worker - dermal, long-term - systemic</th>
<th>0.0274 mg/kg bw/day</th>
<th>0.024</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC20</td>
<td>ECETOC TRA</td>
<td></td>
<td></td>
<td></td>
<td>0.274 mg/kg bw/day</td>
<td>0.024</td>
</tr>
<tr>
<td>PROC26</td>
<td>ECETOC TRA</td>
<td></td>
<td></td>
<td></td>
<td>0.0068 mg/kg bw/day</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

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

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

PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC10: Roller application or brushing

PROC11: Non-industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC19: Manual activities involving hand contact

PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC28: Manual maintenance (cleaning and repair) of machinery

PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4: Chemical production where opportunity for exposure arises

PROC5: Mixing or blending in batch processes

PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

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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

www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Service life - workers, Professional use, Use in rigid foams, coatings, adhesives and sealants, Polyurethane

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

Environmental Release Categories: ERC10a, ERC11a: Widespread use of articles with low release (outdoor), Widespread use of articles with low release (indoor)

Process categories: PROC21: Low energy manipulation and handling of substances bound in/on materials and/or articles

2.1 Contributing scenario controlling environmental exposure for: ERC10a, ERC11a: Widespread use of articles with low release (outdoor), Widespread use of articles with low release (indoor)

Amount used
Daily amount per site: <= 0.00316 tonnes/day

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

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air: 0.05 %
Emission or Release Factor: Water: 3.2 %
Emission or Release Factor: Soil: 3.2 %

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Standard
Effectiveness (of a measure): 87.34 %

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

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 0.1%.
Physical Form (at time of use): Solid or article

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor

Technical conditions and measures
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC10a, ERC11a</td>
<td>EUSES v2.1</td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>0.00317 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh water</td>
<td>Fresh water sediment</td>
<td>0.012 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marine water</td>
<td>Marine water</td>
<td>0.000301 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.00113 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0.0064 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td>0.00229 mg/kg dry weight</td>
<td>&lt; 0.01</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>PROC21</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.1 mg/m³</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.283 mg/kg bw/day</td>
<td>0.025</td>
<td></td>
</tr>
</tbody>
</table>

ERC10a: Widespread use of articles with low release (outdoor)
ERC11a: Widespread use of articles with low release (indoor)
PROC21: Low energy manipulation and handling of substances bound in/on materials and/or articles

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
www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Professional use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent

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

Environmental Release Categories:
ERC8c, ERC8f: Widespread use leading to inclusion into/onto article (indoor), Widespread use leading to inclusion into/onto article (outdoor)

Process categories:
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10: Roller application or brushing
PROC11: Non-industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC15: Use as laboratory reagent
PROC19: Manual activities involving hand contact

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8f: Widespread use leading to inclusion into/onto article (indoor), Widespread use leading to inclusion into/onto article (outdoor)

Amount used
Daily amount per site: <= 0.00316 tonnes/day

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

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air: 0 %
Emission or Release Factor: Water: 1.5 %
Emission or Release Factor: Soil: 0 %
Remarks: FEICA SPERC 8c.3.v3

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Standard
2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>General exposures (closed systems)</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 50%.</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 70 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Activity</th>
<th>General exposures (closed systems), With sample collection</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 50%.</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 70 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

2.4 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations, Closed systems</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 50%.</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>Frequency of use</td>
<td>&lt;= 8 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Indoor</td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;= 70 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

2.5 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations (open systems), Opportunity for aerosol exposure</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 50%.</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>Frequency of use</td>
<td>&lt;= 1 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Indoor</td>
</tr>
<tr>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;= 70 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

### 2.6 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Activity</th>
<th>Film formation - air drying, Open systems</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 percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 4 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

**Organisational measures to prevent /limit releases, dispersion and exposure**
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

### 2.7 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mixing operations (open systems), Preparation of material for application</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 percentage substance in the product up to 50%.</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Frequency and duration of use</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency of use</td>
<td>&lt;= 1 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>
Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Spraying, 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 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>Frequency of use</td>
<td>&lt;= 4 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</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>Temperature</td>
<td>&lt;= 40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Operating temperature</td>
</tr>
</tbody>
</table>

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection., APF 20
Use suitable eye protection.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Preparation of material for application, Mixing operations (open systems), Opportunity for aerosol exposure</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 50%.</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>Frequency of use</td>
<td>&lt;= 1 h/day</td>
</tr>
<tr>
<td>Remarks</td>
<td>Inhalation, Dermal</td>
</tr>
</tbody>
</table>
Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Temperature : <= 70 °C
Remarks : Operating temperature

Technical conditions and measures

Local exhaust ventilation
Provide the operation with a properly sited receiving hood. (Effectiveness (of a measure): 80 - 90 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection., APF 20
Use suitable eye protection.

2.10 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

Product characteristics

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

Frequency and duration of use

Frequency of use : <= 4 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection., APF 10
Use suitable eye protection.

2.11 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

Product characteristics
DIETHYLENETRIAMINE (DETA)

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

Frequency and duration of use
Frequency of use: <= 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 40 °C
Remarks: Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

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

Activity: Roller, spreader, flow application
Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 50%.
Physical Form (at time of use): liquid

Frequency and duration of use
Frequency of use: <= 4 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: <= 70 °C
Remarks: Operating temperature

Technical conditions and measures
Local exhaust ventilation
Provide the operation with a properly sited receiving hood. (Effectiveness (of a measure): 80 - 90 %)

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection., APF 20
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>Dipping, immersion and pouring</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 percentage substance in the product up to 50%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

| Frequency of use | <= 4 h/day |
| Remarks | Inhalation, Dermal |

### Other operational conditions affecting workers exposure

| Outdoor / Indoor | Indoor |
| Temperature | <= 70 °C |
| Remarks | Operating temperature |

### Technical conditions and measures

- Local exhaust ventilation
  - Provide the operation with a properly sited receiving hood. (Effectiveness of a measure): 80 - 90 %

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

- Assumes a good basic standard of occupational hygiene is implemented
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness of a measure): >= 90 %
- Wear respiratory protection., APF 10
- Use suitable eye protection.

## 2.14 Contributing scenario controlling worker exposure for: PROC8a, PROC28: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities, Manual maintenance (cleaning and repair) of machinery

<table>
<thead>
<tr>
<th>Activity</th>
<th>Equipment cleaning and maintenance</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 percentage substance in the product up to 50%</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>liquid</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

| Frequency of use | <= 4 h/day |
| Remarks | Inhalation, Dermal |

### Other operational conditions affecting workers exposure

| Outdoor / Indoor | Indoor |
| Temperature | <= 40 °C |
| Remarks | Operating temperature |
Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(Effectiveness (of a measure): >= 90 %)
Wear respiratory protection, APF 10
Use suitable eye protection.

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

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

Frequency and duration of use
Frequency of use : <= 8 h/day
Remarks : Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : <= 40 °C
Remarks : Operating temperature

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
(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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8c</td>
<td>EUSES v2.1</td>
<td></td>
<td>Fresh water</td>
<td>0.00283 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC8f</td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.011 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000267 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.001 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
</tbody>
</table>
## DIETHYLENETRIAMINE (DETA)

### Sewage treatment plant

<table>
<thead>
<tr>
<th>Scenario</th>
<th>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>Worker - inhalative, long-term - systemic</td>
<td>0.43 mg/m³</td>
<td>0.028</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>15.04 mg/m³</td>
<td>0.977</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.137 mg/kg bw/day</td>
<td>0.012</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term - systemic</td>
<td>12.89 mg/m³</td>
<td>0.837</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.069 mg/kg bw/day</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Preparation of material for application, Mixing operations (open systems)</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Film formation - air drying, Open systems</td>
<td>7.737 mg/m³</td>
<td>0.502</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.686 mg/kg bw/day</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Worker - inhalative, long-term -</td>
<td>2.579 mg/m³</td>
<td>0.167</td>
<td></td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Source</th>
<th>Exposure Route</th>
<th>Duration</th>
<th>Concentration</th>
<th>L'DERM</th>
<th>L'SYSTEMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC11</td>
<td>ECETOC TRA</td>
<td>Spraying, Manual</td>
<td>Worker - dermal, long-term - systemic</td>
<td>1.371 mg/kg bw/day</td>
<td>5.416 mg/m³</td>
<td>0.352</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>6.428 mg/kg bw/day</td>
<td>0.564</td>
<td></td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>3.009 mg/m³</td>
<td>2.829 mg/kg bw/day</td>
<td>0.195</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>6.448 mg/m³</td>
<td>0.419</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>1.371 mg/kg bw/day</td>
<td>1.371 mg/kg bw/day</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>12.9 mg/m³</td>
<td>0.837</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>1.37 mg/kg bw/day</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>PROC10</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>12.89 mg/m³</td>
<td>1.646 mg/kg bw/day</td>
<td>0.144</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.823 mg/kg bw/day</td>
<td>0.072</td>
<td></td>
</tr>
<tr>
<td>PROC13</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>9.027 mg/m³</td>
<td>4.514 mg/m³</td>
<td>0.293</td>
</tr>
<tr>
<td>PROC8a</td>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC28</td>
<td></td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### DIETHYLENETRIAMINE (DETA)

<table>
<thead>
<tr>
<th>PROC15</th>
<th>ECETOC TRA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
</tr>
<tr>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
</tr>
<tr>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
</tr>
</tbody>
</table>

**ERC8c:** Widespread use leading to inclusion into/onto article (indoor)
**ERC8f:** Widespread use leading to inclusion into/onto article (outdoor)
**PROC1:** Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
**PROC10:** Roller application or brushing
**PROC11:** Non-industrial spraying
**PROC13:** Treatment of articles by dipping and pouring
**PROC15:** Use as laboratory reagent
**PROC19:** Manual activities involving hand contact
**PROC2:** Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
**PROC28:** Manual maintenance (cleaning and repair) of machinery
**PROC3:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
**PROC4:** Chemical production where opportunity for exposure arises
**PROC5:** Mixing or blending in batch processes
**PROC8a:** Transfer of substance or mixture (charging/discharging) at non dedicated-facilities
**PROC8b:** Transfer of substance or mixture (charging/discharging) 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
www.echa.europa.eu/regulations/reach/downstream-users
1. Short title of Exposure Scenario: Service life - workers, Professional use, Use in rigid foams, coatings, adhesives and sealants, Epoxy curing agent

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

Environmental Release Categories: ERC10a, ERC11a: Widespread use of articles with low release (outdoor), Widespread use of articles with low release (indoor)

Process categories: PROC21: Low energy manipulation and handling of substances bound in/on materials and/or articles

2.1 Contributing scenario controlling environmental exposure for: ERC10a, ERC11a: Widespread use of articles with low release (outdoor), Widespread use of articles with low release (indoor)

Amount used
Daily amount per site: ≤ 0.00316 tonnes/day

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

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air: 0.05 %
Emission or Release Factor: Water: 3.2 %
Emission or Release Factor: Soil: 3.2 %

Conditions and measures related to sewage treatment plant
Type of Sewage Treatment Plant: Standard
Effectiveness (of a measure): 87.34 %

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

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

Frequency and duration of use
Frequency of use: ≤ 8 h/day
Remarks: Inhalation, Dermal

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Outdoor / Indoor: Outdoor
Technical conditions and measures
Assumes a good basic standard of occupational hygiene is implemented
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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>Compartment</th>
<th>Value</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC10a</td>
<td>EUSES v2.1</td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>0.00317 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC11a</td>
<td></td>
<td></td>
<td>Fresh water sediment</td>
<td>0.012 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000301 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.00113 mg/kg dry weight</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0.0064 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soil</td>
<td>0.00229 mg/kg dry weight</td>
<td>&lt; 0.01</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>PROC21</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker - inhalative, long-term - systemic</td>
<td>0.1 mg/m³</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker - dermal, long-term - systemic</td>
<td>0.283 mg/kg bw/day</td>
<td>0.025</td>
</tr>
</tbody>
</table>

ERC10a: Widespread use of articles with low release (outdoor)
ERC11a: Widespread use of articles with low release (indoor)
PROC21: Low energy manipulation and handling of substances bound in/on materials and/or articles

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
www.echa.europa.eu/regulations/reach/downstream-users