Annex - Exposure Scenario

Summary of Exposure Scenarios

The annex is part of the safety data sheet. Separate page numbering is due to technical reasons.
1. Short title of Exposure Scenario:
Manufacture

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

Process categories:
PROC1: Use in closed process, no likelihood of exposure
PROC4: Use in batch and other process (synthesis) where opportunity for
exposure arises
PROC8b: Transfer of substance or preparation (charging/ discharging) from/
to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers
(dedicated filling line, including weighing)

Environmental Release Categories: ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for:
ERC1: Manufacture of substances

Amount used
Daily amount per site: <= 25 tons
Annual amount per site: <= 5000 tons
Fraction of EU tonnage used in region: 100 %
Fraction of regional tonnage used locally: 100 %

Environment factors not influenced by risk management
Receiving surface water flow (m3/day): 18.000 m3/d
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: 0 %
Emission or Release Factor: Soil: 0,01 %
Remarks: Common practices vary across sites thus conservative process release
estimates used.
Number of emission days per year: >= 200

Technical conditions and measures / Organizational measures
Air: Air emission abatement is required. (Effectiveness (of a measure): 99 %)
Water: Dispose of rinse water in accordance with local and national regulations.
Prevent leaks and prevent soil / water pollution caused by leaks. Contain
spillage, soak up with non-combustible absorbent material, (e.g. sand, earth,
diatomaceous earth, vermiculite) and transfer to a container for disposal
according to local / national regulations (see section 13). Bund storage
facilities to prevent soil and water pollution in the event of spillage.

Soil: The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent: 2.000 m3/d
Effectiveness (of a measure): 85.6 %
Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on
agricultural soil., Can be incinerated, when in compliance with local

Print Date 09.03.2018  Annex Dibenzyllbenzene, ar-methyl derivative 2/46
Conditions and measures related to external treatment of waste for disposal

Waste treatment: Waste has to be incinerated in thermal combustion units where the substance is completely removed.

Disposal methods: It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste

Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

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

Product characteristics

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

Physical Form (at time of use): Liquid substance

Frequency and duration of use/exposure

Exposure duration: 1 - 4 h

Other operational conditions affecting workers exposure

End Use: Outdoor

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.3 Contributing scenario controlling worker exposure for:
PROC4: Equipment 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 substance

Frequency and duration of use/exposure

Exposure duration: 1 - 4 h

Other operational conditions affecting workers exposure

End Use: Outdoor

Risk Management Measures

Personal protective measures: Wear chemically resistant gloves in combination with specific activity training. Wear suitable respiratory protection with adequate efficiency.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

Product characteristics

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

Frequency and duration of use/exposure
Exposure duration : 1 - 4 h

Other operational conditions affecting workers exposure
End Use : Outdoor

Risk Management Measures
Personal protective measures : Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

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

Frequency and duration of use/exposure
Exposure duration : > 4 h

Other operational conditions affecting workers exposure
End Use : Indoor

Risk Management Measures
Engineering measures : Use with local exhaust ventilation.
Personal protective measures : Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>Specifying conditions</th>
<th>Compartment</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Fresh water</td>
<td>0.0000062 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0.056 mg/kg dry weight (d.w.)</td>
<td>0.513</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Marine water</td>
<td>0.0000009 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Marine sediment</td>
<td>0.008 mg/kg dry weight (d.w.)</td>
<td>0.074</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Air</td>
<td>0.002 mg/m³</td>
<td>&lt; 1</td>
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</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Soil</td>
<td>0.23 mg/kg dry weight (d.w.)</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Man via environment</td>
<td>0.093 mg/kg bw/day</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>ERC1 ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health</th>
<th>Specifying conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
</table>
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
ES 2

1. Short title of Exposure Scenario:
Industrial use, Electrical industry and electronics

Main User Groups : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories : 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
                    PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at dedicated facilities
                    PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
                    PROC13: Treatment of articles by dipping and pouring
                    PROC19: Hand-mixing with intimate contact and only PPE available

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

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

Amount used
Daily amount per site : <= 0.1 tons
Annual amount per site : <= 10 tons
Fraction of EU tonnage used in region: : 10 %
Fraction of regional tonnage used locally: : 10 %

Environment factors not influenced by risk management
Receiving surface water flow (m3/day): : 18,000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air : 5 %
Emission or Release Factor: Water : 0 %
Emission or Release Factor: Soil : 5 %
Remarks : Common practices vary across sites thus conservative process release estimates used.
Number of emission days per year : >= 100

Technical conditions and measures / Organizational measures
Water : Dispose of rinse water in accordance with local and national regulations. Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.
Soil : The product should not be allowed to enter drains, water courses or the soil.
Remarks : Ensure operatives are trained to minimise exposures.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 85.6 %
Sludge Treatment : Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil. Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Waste has to be incinerated in thermal combustion units where the substance is completely removed.
Disposal methods : It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste
Remarks : Where possible recycling is preferred to disposal or incineration.
Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling worker exposure for:
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
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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 substance

Frequency and duration of use/exposure
Exposure duration : > 4 h

Other operational conditions affecting workers exposure
End Use : Indoor

Risk Management Measures
Personal protective measures : Wear chemically resistant gloves in combination with specific activity training.
Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

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

Frequency and duration of use/exposure
Exposure duration : > 4 h

Other operational conditions affecting workers exposure
End Use : Indoor

Risk Management Measures
Engineering measures : Use with local exhaust ventilation. Avoid carrying out operation for more than 4 hours.
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment:
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.4 Contributing scenario controlling worker exposure for:
PROC19: Hand-mixing with intimate contact and only PPE available
Concentration: >25%

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 substance

Frequency and duration of use/exposure:
- Exposure duration: 1 - 4 h

Other operational conditions affecting workers exposure:
- End Use: Indoor

Risk Management Measures:
- Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment:
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.5 Contributing scenario controlling worker exposure for:
PROC19: Hand-mixing with intimate contact and only PPE available
Concentration: 1 - 5%

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 substance

Frequency and duration of use/exposure:
- Exposure duration: 15 min - 1 h

Other operational conditions affecting workers exposure:
- End Use: Indoor

Risk Management Measures:
- Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment:
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0.0000062 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
</tbody>
</table>
### ERC7 ECETOC TRA

<table>
<thead>
<tr>
<th>Environment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water sediment</td>
<td>0.056 mg/kg dry weight (d.w.)</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Marine water</td>
<td>0.0000009 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>Marine sediment</td>
<td>0.008 mg/kg dry weight (d.w.)</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Air</td>
<td>0.0004 mg/m³</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0.062 mg/kg dry weight (d.w.)</td>
<td>0.062</td>
<td></td>
</tr>
<tr>
<td>Man via environment</td>
<td>0.019 mg/kg bw/day</td>
<td>0.077</td>
<td></td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Health

#### Contributing Scenario
- **PROC2**: Saturated vapour concentration over long term inhalative systemic.
- **PROC3**: Saturated vapour concentration over long term inhalative systemic.
- **PROC4**: ECETOC TRA Gloves: 95% protection over long term dermal systemic.
- **PROC8b PROC9**: Saturated vapour concentration over long term inhalative systemic.
- **PROC13**: ECETOC TRA Without Local Exhaust Ventilation over long term inhalative systemic.
- **PROC19**: Concentration: >25% ECETOC TRA With Local Exhaust Ventilation over long term inhalative systemic.

#### Specific conditions
- Gloves: 95% protection
- ECETOC TRA

#### Value type
- long term inhalative systemic
- long term dermal systemic
- long term inhalative systemic
- long term dermal systemic

#### Level of Exposure
- 0.115 mg/m³
- 0.115 mg/m³
- 0.069 mg/kg bw/day
- 0.343 mg/kg bw/day
- 0.017 mg/kg bw/day
- 0.023 mg/kg bw/day
- 0.424 mg/kg bw/day
- 0.034 mg/kg bw/day
- 0.071 mg/kg bw/day

#### RCR
- 0.033
- 0.033
- 0.137
- 0.034
- 0.686
- 0.02
- 0.823
- 0.003
- 0.069
- 0.007
- 0.849
- 0.007
- 0.141

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Health

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
ES 3

1. Short title of Exposure Scenario:
Professional use, Electrical industry and electronics

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

Process categories: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC19: Hand-mixing with intimate contact and only PPE available

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

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

Amount used
Daily amount per site: <= 0.1 tons
Annual amount per site: <= 10 tons
Fraction of EU tonnage used in region: 10 %
Fraction of regional tonnage used locally: 10 %

Environment factors not influenced by risk management
Receiving surface water flow (m3/day): 18,000 m3/d
Dilution Factor (River): 10
Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air: 5 %
Emission or Release Factor: Water: 0 %
Emission or Release Factor: Soil: 5 %
Remarks: Common practices vary across sites thus conservative process release estimates used.
Number of emission days per year: >= 100

Technical conditions and measures / Organizational measures
Water: Dispose of rinse water in accordance with local and national regulations.
Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.
Soil: The product should not be allowed to enter drains, water courses or the soil.
Remarks: Ensure operatives are trained to minimise exposures.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent: 2,000 m3/d
Effectiveness (of a measure): 85.6 %
Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil., Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Waste has to be incinerated in thermal combustion units where the substance
Disposal methods: It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste
Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

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

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

Frequency and duration of use/exposure
Exposure duration: 1 - 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

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

Frequency and duration of use/exposure
Exposure duration: 15 - 60 min

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

3. Exposure estimation and reference to its source

Environment

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<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
</table>

Print Date 09.03.2018

Annex Dibenzylbenzene, ar-methyl derivative
DIBENZYLBENZENE, AR-METHYL DERIVATIVE

Version: 1.01
Revision Date 26.02.2018

ERC7 ECETOC TRA Fresh water 0,0000062 mg/l < 1
ERC7 ECETOC TRA Fresh water sediment 0,056 mg/kg dry weight (d.w.) 0,51
ERC7 ECETOC TRA Marine water 0,0000009 mg/l < 1
ERC7 ECETOC TRA Marine sediment 0,008 mg/kg dry weight (d.w.) 0,07
ERC7 ECETOC TRA Air 0,0004 mg/m³ < 1
ERC7 ECETOC TRA Soil 0,062 mg/kg dry weight (d.w.) 0,062
ERC7 ECETOC TRA Man via environment 0,019 mg/kg bw/day 0,077
ERC7 ECETOC TRA Sewage treatment plant The risk is adequately controlled.

Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0,069 mg/m³</td>
<td>0,02</td>
<td></td>
</tr>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0,411 mg/kg bw/day</td>
<td>0,823</td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0,023 mg/m³</td>
<td>0,007</td>
<td></td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0,071 mg/kg bw/day</td>
<td>0,141</td>
</tr>
</tbody>
</table>

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

Where other Risk Management Measures/OperationalConditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
ES 4

1. Short title of Exposure Scenario:
   Industrial use, Heat transfer fluids

   Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
   Process categories:
   PROC2: Use in closed, continuous process with occasional controlled exposure
   PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
   PROC8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at non-dedicated facilities
   PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at dedicated facilities
   PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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

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

Amount used:
- Daily amount per site: <= 0.5 tons
- Annual amount per site: <= 50 tons
- Fraction of EU tonnage used in region: 10 %
- Fraction of regional tonnage used locally: 10 %

Environment factors not influenced by risk management:
- Receiving surface water flow (m3/day): 18,000 m3/d
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure:
- Emission or Release Factor: Air: 5 %
- Emission or Release Factor: Water: 0 %
- Emission or Release Factor: Soil: 5 %
- Remarks: Common practices vary across sites thus conservative process release estimates used.
- Number of emission days per year: >= 100

Technical conditions and measures / Organizational measures:
- Water: Dispose of rinse water in accordance with local and national regulations. Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.
- Soil: The product should not be allowed to enter drains, water courses or the soil.
- Remarks: Ensure operatives are trained to minimise exposures.

Conditions and measures related to municipal sewage treatment plant:
- Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
- Flow rate of sewage treatment plant effluent: 2,000 m3/d
Effectiveness (of a measure): 85.6%
Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil, Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Waste has to be incinerated in thermal combustion units where the substance is completely removed.
Disposal methods: It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste
Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow advice in the 'Marlotherm® Heat Transfer Fluids' product brochure and in DIN 4754 (heat transfer systems using organic heat transfer fluids).

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

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

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs, Follow advice in the 'Marlotherm® Heat Transfer Fluids' product brochure and in DIN 4754 (heat transfer systems using organic heat transfer fluids).

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

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

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Engineering measures: Use with local exhaust ventilation.
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs, Follow advice in the 'Marlotherm® Heat Transfer Fluids' product.
2.4 Contributing scenario controlling worker exposure for:
PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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 substance

Frequency and duration of use/exposure
- Exposure duration: > 4 h
- Frequency of use: < 1 days/year

Other operational conditions affecting workers exposure
- End Use: Indoor

Additional good practice advice beyond the REACH Chemical Safety Assessment
- Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs., Follow advice in the 'Marlotherm® Heat Transfer Fluids' product brochure and in DIN 4754 (heat transfer systems using organic heat transfer fluids).

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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0,0000062 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0,056 mg/kg dry weight (d.w.)</td>
<td>0,51</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0,0000009 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0,008 mg/kg dry weight (d.w.)</td>
<td>0,07</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0,002 mg/m³</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0,23 mg/kg dry weight (d.w.)</td>
<td>0,23</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0,094 mg/kg bw/day</td>
<td>0,37</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Health**

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC2</td>
<td>Saturated vapour concentration</td>
<td>long term, inhalative, systemic</td>
<td>0,115 mg/m³</td>
<td>0,033</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0,069 mg/kg bw/day</td>
<td>0,137</td>
</tr>
</tbody>
</table>

Print Date 09.03.2018
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

**Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

**Health**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
ES 5

1. Short title of Exposure Scenario:
Industrial use, Heat transfer fluids, Recycling

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

Process categories
: PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Environmental Release Categories
: ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for:
ERC1: Manufacture of substances

Amount used
Daily amount per site : <= 2.5 tons
Annual amount per site : <= 500 tons
Fraction of EU tonnage used in region: : 100 %
Fraction of regional tonnage used locally: : 100 %

Environment factors not influenced by risk management
Receiving surface water flow (m³/day): : 18,000 m³/d
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 : 0 %
Emission or Release Factor: Soil : 0.01 %
Remarks : Common practices vary across sites thus conservative process release estimates used.
Number of emission days per year : >= 200

Technical conditions and measures / Organizational measures
Air : Air emission abatement is required (Effectiveness of a measure): 99 %
Water : Dispose of rinse water in accordance with local and national regulations.
Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.
Soil : The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent : 2,000 m³/d
Effectiveness (of a measure) : 85.6 %
Sludge Treatment : Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil., Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Waste has to be incinerated in thermal combustion units where the substance
Disposal methods is completely removed.

Conditions and measures related to external recovery of waste
Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling worker exposure for:
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

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

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>Air</td>
<td>0.0000062 mg/l</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>Marine water</td>
<td>0.0000009 mg/l</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>Marine sediment</td>
<td>0.008 mg/kg dry weight</td>
<td>0.07</td>
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<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0.00002 mg/m³</td>
<td>&lt; 1</td>
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<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0.04 mg/kg dry weight</td>
<td>0.04</td>
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<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0.01 mg/kg bw/day</td>
<td>0.04</td>
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<tr>
<td>ERC1</td>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC3</td>
<td>Saturated vapour concentration</td>
<td>long term, inhalative, systemic</td>
<td>0.115 mg/m³</td>
<td>0.033</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0.017 mg/kg bw/day</td>
<td>0.034</td>
</tr>
</tbody>
</table>
PROC4 | Saturated vapour concentration | long term, inhalative, systemic | 0.115 mg/m³ | 0.033 
--- | --- | --- | --- | --- 
PROC4 | ECETOC TRA | Gloves: 95% protection | long term, dermal, systemic | 0.343 mg/kg bw/day | 0.686 

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
ES 6

1. Short title of Exposure Scenario:

Professional use, Heat transfer fluids

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

Process categories: PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems

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

2.1 Contributing scenario controlling environmental exposure for:

ERC7: Industrial use of substances in closed systems

Amount used

- Daily amount per site: <= 0.5 tons
- Annual amount per site: <= 50 tons
- Fraction of EU tonnage used in region: 10 %
- Fraction of regional tonnage used locally: 10 %

Environment factors not influenced by risk management

- Receiving surface water flow (m3/day): 18.000 m3/d
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure

- Emission or Release Factor: Air: 5 %
- Emission or Release Factor: Water: 0 %
- Emission or Release Factor: Soil: 5 %

Remarks: Common practices vary across sites thus conservative process release estimates used.

Number of emission days per year: >= 100

Technical conditions and measures / Organizational measures

Water: Dispose of rinse water in accordance with local and national regulations. Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.

Soil: The product should not be allowed to enter drains, water courses or the soil.

Remarks: Ensure operatives are trained to minimise exposures.

Conditions and measures related to municipal sewage treatment plant

- Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
- Flow rate of sewage treatment plant effluent: 2,000 m3/d
- Effectiveness (of a measure): 85.6 %
- Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil., Can be landfilled or incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

- Waste treatment: Waste has to be incinerated in thermal combustion units where the substance is completely removed.
**Disposal methods**

It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

**Conditions and measures related to external recovery of waste**

Remarks: Where possible recycling is preferred to disposal or incineration.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

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

**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 100 % (unless stated differently).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid substance</td>
</tr>
</tbody>
</table>

**Frequency and duration of use/exposure**

<table>
<thead>
<tr>
<th>Exposure duration</th>
<th>&gt; 4 h</th>
</tr>
</thead>
</table>

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>End Use</th>
<th>Indoor</th>
</tr>
</thead>
</table>

**Risk Management Measures**

**Personal protective measures**

Wear chemically resistant gloves in combination with specific activity training.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

### 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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0.0000062 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0.056 mg/kg dry weight (d.w.)</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0.0000009 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0.008 mg/kg dry weight (d.w.)</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0.002 mg/m³</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0.23 mg/kg dry weight (d.w.)</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0.094 mg/kg bw/day</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>ERC7</td>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC20</td>
<td>Saturated vapour concentration</td>
<td>long term, inhalative, systemic</td>
<td>0.115 mg/m³</td>
<td>0.033</td>
<td></td>
</tr>
<tr>
<td>PROC20</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0.086 mg/kg bw/day</td>
<td>0.171</td>
</tr>
</tbody>
</table>
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health
Where other Risk Management Measures/OperationalConditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
ES 7

1. Short title of Exposure Scenario:

**Industrial use, Plasticiser**

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

Process categories:

- PROC2: Use in closed, continuous process with occasional controlled exposure
- PROC3: Use in closed batch process (synthesis or formulation)
- PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
- PROC8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at non-dedicated facilities
- PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at dedicated facilities
- PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC15: Use as laboratory reagent

Environmental Release Categories: ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for:

**ERC2: Formulation of preparations**

Amount used

- Daily amount per site: \( \leq 1 \) tons
- Annual amount per site: \( \leq 100 \) tons
- Fraction of EU tonnage used in region: 100 %
- Fraction of regional tonnage used locally: 100 %

Environment factors not influenced by risk management

- Receiving surface water flow (m3/day): 18,000 m3/d
- Dilution Factor (River): 10
- Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure

- Emission or Release Factor: Air: 2.5 %
- Emission or Release Factor: Water: 0 %
- Emission or Release Factor: Soil: 0.01 %

Remarks: Common practices vary across sites thus conservative process release estimates used.

Number of emission days per year: \( \geq 100 \)

Technical conditions and measures / Organizational measures

**Water**

- Dispose of rinse water in accordance with local and national regulations.
- Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.

**Soil**

- The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant

- Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
- Flow rate of sewage treatment plant effluent: 2,000 m3/d
Effectiveness (of a measure) : 85.6 %
Sludge Treatment : Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil., Can be incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment : Waste has to be incinerated in thermal combustion units where the substance is completely removed.
Disposal methods : It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste
Remarks : Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling worker exposure for:
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
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 substance

Frequency and duration of use/exposure
Exposure duration : > 4 h

Other operational conditions affecting workers exposure
End Use : Indoor

Risk Management Measures
Personal protective measures : Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

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

Frequency and duration of use/exposure
Exposure duration : > 4 h

Other operational conditions affecting workers exposure
End Use : Indoor

Risk Management Measures
Engineering measures : Use with local exhaust ventilation. or Avoid carrying out operation for more than 4 hours.
Personal protective measures : Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice : Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.
2.4 Contributing scenario controlling worker exposure for:
PROC8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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 substance

Frequency and duration of use/exposure
Exposure duration: 15 - 60 min

Other operational conditions affecting workers' exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.
Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

3. Exposure estimation and reference to its source

Environment

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<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
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<th>Compartment</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0,000006 mg/l</td>
<td>&lt; 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0,057 mg/kg dry weight (d.w.)</td>
<td>0,514</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0,0000008 mg/l</td>
<td>&lt; 1</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0,008 mg/kg dry weight (d.w.)</td>
<td>0,069</td>
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<tr>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0,002 mg/m³</td>
<td>&lt; 1</td>
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<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0,23 mg/kg dry weight (d.w.)</td>
<td>0,23</td>
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<tr>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0,094 mg/kg bw/day</td>
<td>0,37</td>
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<tr>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC2</td>
<td>Saturated vapour concentration</td>
<td>long term, inhalative, systemic</td>
<td>0,115 mg/m³</td>
<td>0,033</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal, systemic</td>
<td>0,069 mg/kg bw/day</td>
<td>0,137</td>
</tr>
<tr>
<td>PROC3</td>
<td>Saturated vapour concentration</td>
<td>long term, inhalative, systemic</td>
<td>0,115 mg/m³</td>
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<td></td>
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<tr>
<td>PROC15</td>
<td>ECETOC TRA</td>
<td>Gloves: 95% protection</td>
<td>long term, dermal,</td>
<td>0,017 mg/kg</td>
<td>0,034</td>
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</table>

Print Date 09.03.2018  Annex Dibenzylbenzene, ar-methyl derivative 26/46
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

**Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

**Health**

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
1. Short title of Exposure Scenario:
Industrial use, Plasticiser

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

Sectors of end-use
SU11: Manufacture of rubber products

Process categories
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC21: Low energy manipulation of substances bound in materials and/or articles

Environmental Release Categories
ERC3: Formulation in materials

2.1 Contributing scenario controlling environmental exposure for:
ERC3: Formulation in materials

Amount used
Daily amount per site : <= 0.5 tons
Annual amount per site : <= 100 tons
Fraction of EU tonnage used in region: : 10 %
Fraction of regional tonnage used locally: : 100 %

Environment factors not influenced by risk management
Receiving surface water flow (m3/day): : 18,000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air : 1 %
Emission or Release Factor: Water : 0 %
Emission or Release Factor: Soil : 0.05 %
Remarks: Common practices vary across sites thus conservative process release estimates used.
Number of emission days per year : >= 20

Technical conditions and measures / Organizational measures
Water: Dispose of rinse water in accordance with local and national regulations. Prevent leaks and prevent soil/water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.

Soil: The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent: 2,000 m³/d
Effectiveness (of a measure): 85.6 %
Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil. Can be incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Waste has to be incinerated in thermal combustion units where the substance is completely removed.
Disposal methods: It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Conditions and measures related to external recovery of waste
Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

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

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

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Engineering measures: Use with local exhaust ventilation.
Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.3 Contributing scenario controlling worker exposure for:
PROC5_1: Latex ingredient preparation - Grinding
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

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

Frequency and duration of use/exposure
Exposure duration: 1 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

Out-door use, liquid

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

Frequency and duration of use/exposure
Exposure duration: 15 - 60 min

Other operational conditions affecting workers exposure
End Use: Outdoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.6 Contributing scenario controlling worker exposure for:
PROC9_1: Mixing operations

liquid

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 12%.
Physical Form (at time of use): liquid

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.7 Contributing scenario controlling worker exposure for:
PROC9_2: Cement preparation

liquid

Product characteristics
Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 1 %.
Physical Form (at time of use): liquid
**EC-SAFETY DATA SHEET**

**DIBENZYL BENZENE, AR-METHYL DERIVATIVE**

**Version**: 1.01  
**Revision Date**: 26.02.2018

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**Frequency and duration of use/exposure**

**Exposure duration**: 1 - 4 h

**Other operational conditions affecting workers exposure**

**End Use**: Indoor

**Risk Management Measures**

**Personal protective measures**: Wear chemically resistant gloves in combination with basic employee training.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

**Additional good practice advice**: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

---

**2.8 Contributing scenario controlling worker exposure for:**

**PROC10: Roller application or brushing**

**Liquid, Concentration**: 1 - 5%

**Product characteristics**

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

**Physical Form (at time of use)**: liquid

**Frequency and duration of use/exposure**

**Exposure duration**: > 4 h

**Other operational conditions affecting workers exposure**

**End Use**: Indoor

**Risk Management Measures**

**Engineering measures**: Use with local exhaust ventilation.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

**Additional good practice advice**: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

---

**2.9 Contributing scenario controlling worker exposure for:**

**PROC10: Roller application or brushing**

**Liquid, Concentration**: < 1%

**Product characteristics**

**Concentration of the Substance in Mixture/Article**: Covers percentage substance in the product up to 1 %.

**Physical Form (at time of use)**: liquid

**Frequency and duration of use/exposure**

**Exposure duration**: > 4 h

**Other operational conditions affecting workers exposure**

**End Use**: Indoor

**Risk Management Measures**

**Personal protective measures**: Wear suitable respiratory protection with adequate efficiency.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

**Additional good practice advice**: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

---

**2.10 Contributing scenario controlling worker exposure for:**

**PROC14_1: Shaping - Extrusion**

**PROC14_2: Shaping - Milling + calendaring**
**Product characteristics**

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

Physical Form (at time of use): liquid

**Frequency and duration of use/exposure**

Exposure duration: > 4 h

**Other operational conditions affecting workers exposure**

End Use: Indoor

**Risk Management Measures**

Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

**2.10 Contributing scenario controlling worker exposure for:**

PROC5_1: Latex ingredient preparation - Grinding

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

**solid**

**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): Solid, low dustiness

**Frequency and duration of use/exposure**

Exposure duration: 1 h

**Other operational conditions affecting workers exposure**

End Use: Indoor

**Risk Management Measures**

Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

**2.11 Contributing scenario controlling worker exposure for:**

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

PROC14_3: Curing

solid, Use with local exhaust ventilation.
End Use: Indoor

Risk Management Measures
Engineering measures: Use with local exhaust ventilation.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

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): Solid, low dustiness

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with specific activity training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.13 Contributing scenario controlling worker exposure for:
PROC9_1: Mixing operations
PROC13: Treatment of articles by dipping and pouring
PROC14_1: Shaping - Extrusion
PROC14_2: Shaping - Milling + calendaring
PROC21: Low energy manipulation of substances bound in materials and/or articles
solid

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.
Physical Form (at time of use): Solid, low dustiness

Frequency and duration of use/exposure
Exposure duration: > 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Risk Management Measures
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.14 Contributing scenario controlling worker exposure for:
PROC10: Roller application or brushing
solid, Concentration: 1 - 5%

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): Solid, low dustiness

Frequency and duration of use/exposure
- Exposure duration: > 4 h

Other operational conditions affecting workers exposure
- End Use: Indoor

Risk Management Measures
- Engineering measures: Use with local exhaust ventilation.

Additional good practice advice beyond the REACH Chemical Safety Assessment
- Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.15 Contributing scenario controlling worker exposure for:
PROC10: Roller application or brushing
solid, Concentration: <1%

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers percentage substance in the product up to 1%.
- Physical Form (at time of use): Solid, low dustiness

Frequency and duration of use/exposure
- Exposure duration: > 4 h

Other operational conditions affecting workers exposure
- End Use: Indoor

Additional good practice advice beyond the REACH Chemical Safety Assessment
- Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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

Product characteristics
- Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 6%.
- Physical Form (at time of use): Solid, low dustiness

Frequency and duration of use/exposure
- Exposure duration: > 4 h

Other operational conditions affecting workers exposure
- End Use: Indoor

Risk Management Measures
- Personal protective measures: Wear chemically resistant gloves in combination with basic employee training.

Additional good practice advice beyond the REACH Chemical Safety Assessment
- Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.
### 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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0,0000062 mg/l</td>
<td>&lt; 1</td>
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<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0,057 mg/kg dry weight (d.w.)</td>
<td>0,513</td>
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<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0,0000009 mg/l</td>
<td>&lt; 1</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0,008 mg/kg dry weight (d.w.)</td>
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<td>ECETOC TRA</td>
<td>Air</td>
<td>0,000079 mg/m³</td>
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<td>ECETOC TRA</td>
<td>Soil</td>
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<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0,0045 mg/kg bw/day</td>
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<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
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</table>

#### Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
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<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0,068 mg/m³</td>
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<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>long term, dermal, systemic</td>
<td>0,069 mg/kg bw/day</td>
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<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0,014 mg/m³</td>
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<td>PROC5_1</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
<td>0,171 mg/kg bw/day</td>
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<td>PROC8b, PROC9</td>
<td>ECETOC TRA</td>
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<td>0,227 mg/m³</td>
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<tr>
<td>PROC8b, PROC9</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
<td>0,137 mg/kg bw/day</td>
<td>0,274</td>
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<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0,159 mg/m³</td>
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<tr>
<td>PROC8b</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
<td>0,137 mg/kg bw/day</td>
<td>0,274</td>
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<tr>
<td>PROC9_1</td>
<td>ECETOC TRA</td>
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<td>0,068 mg/m³</td>
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<td>PROC9_1</td>
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<td>0,068 mg/m³</td>
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<td>PROC9_2</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
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<td>PROC10</td>
<td>ECETOC TRA</td>
<td>1 - 5%</td>
<td>long term, inhalative, systemic</td>
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<td>1 - 5%</td>
<td>long term, dermal, systemic</td>
<td>0,274 mg/kg bw/day</td>
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<td>ECETOC TRA</td>
<td>≤ 1%, Respirator: 95%</td>
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<td>1,135 mg/m³</td>
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<td>PROC8b</td>
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<td>PROC9</td>
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<td>PROC9</td>
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<td>Physical form: solid</td>
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<td>PROC10</td>
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<td>PROC13</td>
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<tr>
<td>PROC13</td>
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</tbody>
</table>

Print Date 09.03.2018  
Annex Dibenzylbenzene, ar-methyl derivative  
36/46
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
ES 9

1. Short title of Exposure Scenario:
Consumer uses, Rubber articles

Main User Groups:
- SU 21: Consumer uses: Private households (= general public = consumers)
- AC10: Rubber articles

Environmental Release Categories:
- ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
- ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

2.1 Contributing scenario controlling environmental exposure for:
- ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
- ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.

Amount used
- Daily amount per site: <= 0.055 kg
- Annual amount per site: <= 0.02 tons
- Fraction of EU tonnage used in region: 10%
- Fraction of regional tonnage used locally: 0.2%

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

Other given operational conditions affecting environmental exposure
- Number of emission days per year: 365

Conditions and measures related to municipal sewage treatment plant
- Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
- Flow rate of sewage treatment plant effluent: 2,000 m³/d
- Effectiveness (of a measure): 85.6%
- Sludge Treatment: Can be landfilled after chemical and physical treatment, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
- Waste treatment: Waste must be collected and retained. External recovery and recycling of waste should comply with applicable local and/or national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment
- Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling consumer exposure for:
AC10: Rubber articles

Product (article) characteristic
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.
3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0.0000096 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0.088 mg/kg dry weight (d.w.)</td>
<td>0.80</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0.000012 mg/l</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0.011 mg/kg dry weight (d.w.)</td>
<td>0.10</td>
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<tr>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0.000029 mg/m³</td>
<td>&lt; 1</td>
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</tr>
<tr>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0.03 mg/kg dry weight (d.w.)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0.0011 mg/kg bw/day</td>
<td>0.0047</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC10</td>
<td>ECETOC TRA v2.0 Consumer</td>
<td>long term, inhalative, systemic</td>
<td>0.008 mg/m³</td>
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<tr>
<td>AC10</td>
<td>ECETOC TRA v2.0 Consumer</td>
<td>long term, dermal, systemic</td>
<td>0.002 mg/kg bw/day</td>
<td>0.009</td>
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</table>

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
ES 10

1. Short title of Exposure Scenario:

   Industrial use, Rubber articles

   Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
   Process categories: PROC21: Low energy manipulation of substances bound in materials and/or articles
   Environmental Release Categories: ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
                                          ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

2.1 Contributing scenario controlling environmental exposure for:

   ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
   ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

Product characteristics

   Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.

Amount used

   Daily amount per site: <= 0.055 kg
   Annual amount per site: <= 0.02 tons
   Fraction of EU tonnage used in region: 10 %
   Fraction of regional tonnage used locally: 0.2 %

Environment factors not influenced by risk management

   Receiving surface water flow (m3/day): 18,000 m3/d
   Dilution Factor (River): 10
   Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure

   Number of emission days per year: 365

Technical conditions and measures / Organizational measures

   Soil: The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant

   Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
   Flow rate of sewage treatment plant effluent: 2,000 m3/d
   Effectiveness (of a measure): 85.6 %
   Sludge Treatment: Can be landfilled after chemical and physical treatment, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal

   Waste treatment: Waste must be collected and retained. External recovery and recycling of waste should comply with applicable local and/or national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment

   Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling worker exposure for:

   PROC21: Low energy manipulation of substances bound in materials and/or articles
Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.
Physical Form (at time of use): Solid, low dustiness

Frequency and duration of use/exposure
Exposure duration: 1 - 4 h

Other operational conditions affecting workers exposure
End Use: Indoor

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

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>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0,0000096 mg/l</td>
<td>&lt; 1</td>
<td></td>
<td></td>
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<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0,088 mg/kg dry weight (d.w.)</td>
<td>0,80</td>
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<td></td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0,0000012 mg/l</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0,011 mg/kg dry weight (d.w.)</td>
<td>0,10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0,0000029 mg/m³</td>
<td>&lt; 1</td>
<td></td>
<td></td>
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<tr>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0,03 mg/kg dry weight (d.w.)</td>
<td>0,03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0,0011 mg/kg bw/day</td>
<td>0,0047</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Health

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC21</td>
<td>ECETOC TRA v2.0 Worker</td>
<td>long term, inhalative, systemic</td>
<td>0,36 mg/m³</td>
<td>0,102</td>
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</tr>
<tr>
<td>PROC21</td>
<td>ECETOC TRA v2.0 Worker</td>
<td>long term, dermal, systemic</td>
<td>0,204 mg/kg bw/day</td>
<td>0,407</td>
<td></td>
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</tbody>
</table>

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
1. Short title of Exposure Scenario:

**Professional use, Rubber articles**

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process categories</td>
<td>PROC21: Low energy manipulation of substances bound in materials and/or articles</td>
</tr>
</tbody>
</table>
| Environmental Release Categories | ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release  
ERC11a: Wide dispersive indoor use of long-life articles and materials with low release |

2.1 Contributing scenario controlling environmental exposure for:

**ERC10a**: Wide dispersive outdoor use of long-life articles and materials with low release  
**ERC11a**: Wide dispersive indoor use of long-life articles and materials with low release

**Product characteristics**

- **Concentration of the Substance in Mixture/Article**: Covers the percentage of the substance in the product up to 12%.
- **Amount used**
  - Daily amount per site: <= 0.055 kg
  - Annual amount per site: <= 0.02 tons
  - Fraction of EU tonnage used in region: 10 %
  - Fraction of regional tonnage used locally: 0.2 %
- **Environment factors not influenced by risk management**
  - Receiving surface water flow (m3/day): 18,000 m3/d
  - Dilution Factor (River): 10
  - Dilution Factor (Coastal Areas): 100

**Other given operational conditions affecting environmental exposure**

- **Number of emission days per year**: 365

**Technical conditions and measures / Organizational measures**

- **Soil**: The product should not be allowed to enter drains, water courses or the soil.

**Conditions and measures related to municipal sewage treatment plant**

- **Type of Sewage Treatment Plant**: Municipal STP with primary sedimentation.
- **Flow rate of sewage treatment plant effluent**: 2,000 m3/d
- **Effectiveness (of a measure)**: 85.6 %
- **Sludge Treatment**: Can be landfilled after chemical and physical treatment, when in compliance with local regulations.

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

- **Waste treatment**: Waste must be collected and retained. External recovery and recycling of waste should comply with applicable local and/or national regulations.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

- **Additional good practice advice**: Handle in accordance with good industrial hygiene and safety practice.

2.2 Contributing scenario controlling worker exposure for:

**PROC21**: Low energy manipulation of substances bound in materials and/or articles
Product characteristics

Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 12%.

Physical Form (at time of use): Solid, low dustiness

Frequency and duration of use/exposure

Exposure duration: 1 h

Other operational conditions affecting workers exposure

End Use: Indoor

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

3. Exposure estimation and reference to its source

<table>
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</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water</td>
<td>0.0000096 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0.088 mg/kg dry weight (d.w.)</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Marine water</td>
<td>0.000012 mg/l</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0.011 mg/kg dry weight (d.w.)</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0.0000029 mg/m³</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Soil</td>
<td>0.03 mg/kg dry weight (d.w.)</td>
<td>0.03</td>
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</tr>
<tr>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0.0011 mg/kg bw/day</td>
<td>0.0047</td>
<td></td>
</tr>
<tr>
<td>ECETOC TRA</td>
<td>Sewage treatment plant</td>
<td>The risk is adequately controlled.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC21</td>
<td>ECETOC TRA v2.0 Worker</td>
<td>long term, inhalative, systemic</td>
<td>0.225 mg/m³</td>
<td>0.064</td>
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<tr>
<td>PROC21</td>
<td>ECETOC TRA v2.0 Worker</td>
<td>long term, dermal, systemic</td>
<td>0.042 mg/kg bw/day</td>
<td>0.085</td>
</tr>
</tbody>
</table>

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
ES 12

1. Short title of Exposure Scenario:
   Industrial use, Production of cables

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use: SU11: Manufacture of rubber products
Process categories: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

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

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

Amount used
Daily amount per site: <= 1.5 tons
Annual amount per site: <= 150 tons
Fraction of EU tonnage used in region: 100 %
Fraction of regional tonnage used locally: 100 %

Environment factors not influenced by risk management
Receiving surface water flow (m3/day): 18.000 m3/d
Dilution Factor (River): 10
Dilution Factor (Coastal Areas): 100

Other given operational conditions affecting environmental exposure
Emission or Release Factor: Air: 3 %
Emission or Release Factor: Water: 0 %
Emission or Release Factor: Soil: 0 %
Remarks: Common practices vary across sites thus conservative process release estimates used.
Number of emission days per year: >= 100

Technical conditions and measures / Organizational measures
Water: Dispose of rinse water in accordance with local and national regulations. Prevent leaks and prevent soil / water pollution caused by leaks. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Bund storage facilities to prevent soil and water pollution in the event of spillage.
Soil: The product should not be allowed to enter drains, water courses or the soil.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal STP with primary sedimentation.
Flow rate of sewage treatment plant effluent: 2.000 m3/d
Effectiveness (of a measure): 85.6 %
Sludge Treatment: Disposal or recovery, Municipal sewage sludge must not be disposed on agricultural soil, Can be incinerated, when in compliance with local regulations.

Conditions and measures related to external treatment of waste for disposal
Waste treatment: Do not apply industrial sludge to natural soils. Waste must be collected and retained. Waste has to be incinerated in thermal combustion units where the substance is completely removed.

Disposal methods: It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Remarks: External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
Remarks: Where possible recycling is preferred to disposal or incineration.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Handle in accordance with good industrial hygiene and safety practice.

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

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

Frequency and duration of use/exposure
Exposure duration: < 1 h

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

Risk Management Measures
Engineering measures: Use with local exhaust ventilation.
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training. (Effectiveness (of a measure): 90 %)

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

2.3 Contributing scenario controlling worker exposure for:
PROC14_1: Shaping - Extrusion

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

Frequency and duration of use/exposure
Exposure duration: < 1 h

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

Risk Management Measures
Engineering measures: Use with local exhaust ventilation.
Personal protective measures: Wear chemically resistant gloves in combination with basic employee training. (Effectiveness (of a measure): 90 %)

Additional good practice advice beyond the REACH Chemical Safety Assessment
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.
Additional good practice advice: Follow good work practice and refer to chapter 8 of the SDS for resulting RMMs.

3. Exposure estimation and reference to its source

Environment

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<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td>Fresh water sediment</td>
<td>0.00244 mg/kg dry weight (d.w.)</td>
<td>0.022</td>
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<tr>
<td>ECETOC TRA</td>
<td>Marine sediment</td>
<td>0.000353 mg/kg dry weight (d.w.)</td>
<td>&lt; 0.01</td>
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<tr>
<td>ECETOC TRA</td>
<td>Air</td>
<td>0.00343 mg/m³</td>
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<td>Soil</td>
<td>0.027 mg/kg dry weight (d.w.)</td>
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<tr>
<td>ECETOC TRA</td>
<td>Man via environment</td>
<td>0.14 mg/kg bw/day</td>
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Health

<table>
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<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0.023 mg/m³</td>
<td>0.007</td>
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<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
<td>0.007 mg/kg bw/day</td>
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</tr>
<tr>
<td>PROC14_1</td>
<td>ECETOC TRA</td>
<td>long term, inhalative, systemic</td>
<td>0.014 mg/m³</td>
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<tr>
<td>PROC14_1</td>
<td>ECETOC TRA</td>
<td>Gloves: 90% protection</td>
<td>long term, dermal, systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>0.068</td>
</tr>
</tbody>
</table>

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.