SAFETY DATA SHEET

2-Ethylhexanoic acid

10040

Version / Revision 6.00
Supersedes Version 5.00***
Rev.ision Date 01-Feb-2018
Issuing date 01-Feb-2018

SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1. Product identifier

Identification of the substance/preparation 2-Ethylhexanoic acid

CAS-No 149-57-5
EC No. 205-743-6
Registration number (REACH) 01-2119488942-23***

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

Identified uses
- Intermediate
- Formulation
- laboratory chemicals
- Functional Fluids

Uses advised against
- Consumer uses
To avoid exposure of consumers***

1.3. Details of the supplier of the safety data sheet

Company/Undertaking OXEA GmbH
Identification Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information
Product Stewardship
FAX: +49 (0)208 693 2053
email: psq@oxea-chemicals.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Reproductive toxicity Category 2, H361d

Additional information
For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms

Signal word
Warning

Hazard statements
H361d: Suspected of damaging the unborn child.

Precautionary statements
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P308 + P313: IF exposed or concerned: Get medical advice/attention.
P405: Store locked up.
P501: Dispose of contents/container in accordance with local regulation.

2.3. Other hazards

Components of the product may be absorbed into the body by inhalation, ingestion and through the skin***

PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

SECTION 3: Composition / information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>REACH-No</th>
<th>1272/2008/EC</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanoic acid</td>
<td>149-57-5</td>
<td>01-2119488942-23*** *</td>
<td>Repr. 2; H361d</td>
<td>&gt; 99,20</td>
</tr>
</tbody>
</table>

For full text of Hazard- and EU Hazard-statements see SECTION 16.***

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin
Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Eyes
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.
Ingestion
Call a physician immediately. Do not induce vomiting without medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Main symptoms
None known.

Special hazard
Lung irritation, Lung oedema, Kidney disorders, respiratory disorder.

4.3. Indication of any immediate medical attention and special treatment needed

General advice
Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.
Treat symptomatically. If ingested, flush stomach and compensate acidosis.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
foam, dry chemical, carbon dioxide (CO2), water spray

Unsuitable Extinguishing Media
Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:
carbon monoxide (CO)
carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors

5.3. Advice for firefighters

Special protective equipment for firefighters
Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting
Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.
For emergency responders: Personal protection see section 8.***
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6.00

6.2. Environmental precautions
Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment
Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections
For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.***

Advice on safe handling
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment
See Section 8: Environmental exposure controls.

Incompatible products
bases
amines
strong oxidizing agents

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material.

Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Recommended storage temperature: <= 38 °C / <= 100 °F.***

Temperature class
T2
7.3. Specific end use(s)

Intermediate
Formulation
laboratory chemicals
Functional Fluids
For specific end use information see the annex of this safety data sheet

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union
No exposure limits established.

Exposure limits UK
No exposure limits established.

DNEL & PNEC

2-Ethylhexanoic acid, CAS: 149-57-5

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation 14 mg/m³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation No hazard identified***
DN(M)EL - long-term exposure - local effects - Inhalation No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Inhalation Low hazard (no threshold derived)***

DN(M)EL - long-term exposure - systemic effects - Dermal 2 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal Low hazard (no threshold derived)***
DN(M)EL - long-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Dermal Low hazard (no threshold derived)***

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation 3,5 mg/m³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation Low hazard (no threshold derived)***
DN(M)EL - long-term exposure - local effects - Inhalation No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Inhalation Low hazard (no threshold derived)***
DN(M)EL - long-term exposure - systemic effects - Dermal 1 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal Low hazard (no threshold derived)***
DN(M)EL - long-term exposure - local effects - Dermal No hazard identified***
DN(M)EL - acute / short-term exposure - local effects - Dermal Low hazard (no threshold derived)***
DN(M)EL - long-term exposure - systemic effects - Oral 1 mg/kg bw/day
SAFETY DATA SHEET

2-Ethylhexanoic acid

Version / Revision 6 .00

DN(M)EL - acute / short-term exposure - systemic effects - Oral
Low hazard (no threshold derived)***

DN(M)EL - local effects - eyes
low hazard***

Environment
PNEC aqua - freshwater 0,36 mg/l
PNEC aqua - marine water 0,036 mg/l
PNEC aqua - intermittent releases 0,493 mg/l
PNEC STP 71,7 mg/l
PNEC sediment - freshwater 6,37 mg/kg
PNEC sediment - marine water 0,637 mg/kg
PNEC Air No hazard identified***
PNEC soil 1,06 mg/kg
Secondary poisoning No potential for bioaccumulation***

8.2. Exposure controls

Special adaptations (REACH)
Not applicable.

Appropriate Engineering controls
General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General industrial hygiene practice
Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection
Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.
Equipment should conform to EN 166

Hand protection
Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

<table>
<thead>
<tr>
<th>Suitable material</th>
<th>nitrile rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>according to EN 374: level 6</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0,55 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>&gt; 480 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suitable material</th>
<th>polyvinylchloride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Information derived from practical experience</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0,8 mm</td>
</tr>
</tbody>
</table>

Great Britain (E-GB) /EN
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6 .00

Skin and body protection
Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection
Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or
self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Environmental exposure controls
Use product only in closed system. If leakage can not be prevented, the substance needs to be suck off at the
emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is
not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of
leakage into the atmosphere, or of entry into waterways, soil or drains.

Additional advice
Further details on substance data can be found in the registration dossier under the following link:
http://echa.europa.eu/information-on-chemicals/registered-substances. For specific exposure controls see the
annex to this safety data sheet.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>mild</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>3.75 (1 g/l in water @ 25 °C (77 °F)) DIN 19268***</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-83 °C (Pour point)</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>228 °C @ 1013 hPa</td>
</tr>
<tr>
<td>Method</td>
<td>OECD 103***</td>
</tr>
<tr>
<td>Flash point</td>
<td>116 °C @ 1013 hPa***</td>
</tr>
<tr>
<td>Method</td>
<td>closed cup</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Does not apply, the substance is a liquid</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>0.8 Vol %</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>6.7 Vol %</td>
</tr>
<tr>
<td>Vapour pressure values [hPa]</td>
<td>0.04</td>
</tr>
<tr>
<td>Vapour pressure values [kPa]</td>
<td>0.004</td>
</tr>
<tr>
<td>Vapour pressure values [atm]</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Method</td>
<td>@ °C 20  °F 68</td>
</tr>
<tr>
<td>Vapour density</td>
<td>5.0 (Air = 1) @ 20 °C (68 °F)</td>
</tr>
<tr>
<td>Relative density values</td>
<td>@ °C 20  °F 68</td>
</tr>
<tr>
<td>Solubility</td>
<td>1.4 g/l @ 20 °C, in water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>2.7 (measured), OECD 107</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>310 °C</td>
</tr>
<tr>
<td>Method</td>
<td>DIN 51794</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>8 mPa*s @ 20 °C</td>
</tr>
<tr>
<td>Method</td>
<td>dynamic, ASTM D445***</td>
</tr>
</tbody>
</table>
| Explosive properties                          | Does not apply, substance is not explosive. There are no chemical groups
                                                      associated with explosive properties |
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Oxidizing properties
Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

9.2. Other information

Molecular weight 144.21
Molecular formula C8 H16 O2
Refractive index 1.425 @ 20 °C

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

bases, amines, strong oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure Ingestion, Inhalation, Eye contact, Skin contact

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>2-Ethylhexanoic acid (149-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of Exposure</td>
<td>Endpoint</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC0</td>
</tr>
</tbody>
</table>

2-Ethylhexanoic acid, CAS: 149-57-5

Assessment

Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity
Acute inhalation toxicity

Irritation and corrosion

<table>
<thead>
<tr>
<th>2-Ethylhexanoic acid (149-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Organ Effects</strong></td>
</tr>
<tr>
<td><strong>Species</strong></td>
</tr>
<tr>
<td><strong>Result</strong></td>
</tr>
<tr>
<td><strong>Method</strong></td>
</tr>
<tr>
<td>Skin</td>
</tr>
<tr>
<td>rabbit</td>
</tr>
<tr>
<td>Mild skin irritation</td>
</tr>
<tr>
<td>OECD 404</td>
</tr>
<tr>
<td>Eyes</td>
</tr>
<tr>
<td>rabbit</td>
</tr>
<tr>
<td>No eye irritation***</td>
</tr>
<tr>
<td>OECD 405 24h</td>
</tr>
</tbody>
</table>

2-Ethylhexanoic acid, CAS: 149-57-5

Assessment
Based on available data, the classification criteria are not met for:
- skin irritation/corrosion
- eye irritation/corrosion
For respiratory irritation, no data are available

Sensitization

<table>
<thead>
<tr>
<th>2-Ethylhexanoic acid (149-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Organ Effects</strong></td>
</tr>
<tr>
<td><strong>Species</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
</tr>
<tr>
<td><strong>Method</strong></td>
</tr>
<tr>
<td>Skin</td>
</tr>
<tr>
<td>guinea pig</td>
</tr>
<tr>
<td>not sensitizing</td>
</tr>
<tr>
<td>OECD 406</td>
</tr>
</tbody>
</table>

2-Ethylhexanoic acid, CAS: 149-57-5

Assessment
Based on available data, the classification criteria are not met for:
- Skin sensitization
For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

<table>
<thead>
<tr>
<th>2-Ethylhexanoic acid (149-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td><strong>Dose</strong></td>
</tr>
<tr>
<td><strong>Species</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
</tr>
<tr>
<td><strong>Method</strong></td>
</tr>
<tr>
<td>Subchronic toxicity</td>
</tr>
<tr>
<td>NOAEL: ~ 200 mg/kg/d (90d)</td>
</tr>
<tr>
<td>mouse, male/female</td>
</tr>
<tr>
<td>EPA OTS 795.2600 Oral</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
</tr>
<tr>
<td>NOAEL: ~300 mg/kg/d (90d)</td>
</tr>
<tr>
<td>rat, male/female</td>
</tr>
<tr>
<td>EPA OTS 795.2600 Oral</td>
</tr>
</tbody>
</table>

2-Ethylhexanoic acid, CAS: 149-57-5

Assessment
Based on available data, the classification criteria are not met for:
- STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

<table>
<thead>
<tr>
<th>2-Ethylhexanoic acid (149-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td><strong>Dose</strong></td>
</tr>
<tr>
<td><strong>Species</strong></td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
</tr>
<tr>
<td><strong>Method</strong></td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
<tr>
<td>NOAEL 25 mg/kg/d***</td>
</tr>
<tr>
<td>rabbit</td>
</tr>
<tr>
<td>EPA OTS 798.4900 Maternal toxicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
<tr>
<td>NOAEL 250 mg/kg/d***</td>
</tr>
<tr>
<td>rabbit</td>
</tr>
<tr>
<td>EPA OTS 798.4900 Developmental toxicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
<tr>
<td>NOAEL 250 mg/kg/d***</td>
</tr>
<tr>
<td>rat</td>
</tr>
<tr>
<td>EPA OTS 798.4900 Maternal toxicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
<tr>
<td>NOAEL 100 mg/kg/d***</td>
</tr>
<tr>
<td>rat</td>
</tr>
<tr>
<td>EPA OTS 798.4900 Developmental toxicity</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
</tr>
<tr>
<td>NOAEL 250 mg/kg/d</td>
</tr>
<tr>
<td>rat, parental</td>
</tr>
<tr>
<td>Oral OECD 443***</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
</tr>
<tr>
<td>NOAEL 800 mg/kg/d</td>
</tr>
<tr>
<td>rat, 1.</td>
</tr>
<tr>
<td>Oral OECD</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
</tbody>
</table>

**2-Ethylhexanoic acid, CAS: 149-57-5**

**CMR Classification**
The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

**Evaluation**
In vitro tests showed mutagenic effects
Did not show carcinogenic effects in animal experiments
No indication for a carcinogenic potential***

**2-Ethylhexanoic acid, CAS: 149-57-5**

**Target Organ Systemic Toxicant - Single exposure**
Based on available data, the classification criteria are not met for:
STOT SE

**Target Organ Systemic Toxicant - Repeated exposure**
Based on available data, the classification criteria are not met for:
STOT RE

**Aspiration toxicity**
no data available***

**Other adverse effects**
Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.***

**Note**
Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

## SECTION 12: Ecological information

### 12.1. Toxicity

**Acute aquatic toxicity**

<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oryzias latipes (Medaka)</td>
<td>96h</td>
<td>LC50: &gt; 100 mg/l</td>
<td>OECD 203</td>
</tr>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: 85,4 mg/l</td>
<td>79/831/EEC.C2</td>
</tr>
<tr>
<td>Desmodesmus subspicatus</td>
<td>72h</td>
<td>EC50: 49,3 mg/l</td>
<td>DIN 38412, part 9</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6.00

| Pseudomonas putida | 17 h | EC50: 112.1 mg/l (Growth inhibition) | DIN 38412, part 8 |

**Long term toxicity**

2-Ethylhexanoic acid (149-57-5)

<table>
<thead>
<tr>
<th>Type</th>
<th>Species</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>Daphnia magna (Water flea)</td>
<td>NOEC: 25 mg/l***</td>
<td>OECD 211</td>
</tr>
<tr>
<td>Aquatic toxicity***</td>
<td>Desmodesmus subspicatus***</td>
<td>EC10: 32 mg/l (3 h)***</td>
<td>DIN 38412 / part 9***</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

2-Ethylhexanoic acid, CAS: 149-57-5

Biodegradation
99 % (28*** d), Sewage, domestic, aerobic, OECD 301 E.

Abiotic Degradation

2-Ethylhexanoic acid (149-57-5)

<table>
<thead>
<tr>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photolysis***</td>
<td>Half-life (DT50): 47.1 h***</td>
<td>calculated***</td>
</tr>
<tr>
<td>Hydrolysis***</td>
<td>not expected***</td>
<td></td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

2-Ethylhexanoic acid (149-57-5)

<table>
<thead>
<tr>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>log Pow***</td>
<td>2.7***</td>
<td>measured, OECD 107***</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

2-Ethylhexanoic acid, CAS: 149-57-5

No data available***

2-Ethylhexanoic acid (149-57-5)

<table>
<thead>
<tr>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adsorption/Desorption***</td>
<td>Koc: 140.87 @ 20 °C***</td>
<td>OECD 106***</td>
</tr>
<tr>
<td>Surface tension***</td>
<td>Surface activity not expected***</td>
<td></td>
</tr>
<tr>
<td>Distribution to environmental compartments***</td>
<td>Air: 0.93 Soil: 3.64 Water: 91.7 Sediment: 3.68***</td>
<td></td>
</tr>
</tbody>
</table>

12.5. Results of PBT and vPvB assessment

2-Ethylhexanoic acid, CAS: 149-57-5

PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)***

12.6. Other adverse effects

2-Ethylhexanoic acid, CAS: 149-57-5
SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information
Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

Uncleaned empty packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

Section 14.1 - 14.6

ADR/RID
Not restricted

ADN
ADN Container
Not restricted

ADN Tanker

14.1. UN number
ID 9006
14.2. UN proper shipping name
Environmentally hazardous substance, liquid, n.o.s.
14.3. Transport hazard class(es)
9
14.4. Packing group
N3, F
14.5. Environmental hazards
Fish and tree
14.6. Special precautions for user
no data available

ICAO-TI / IATA-DGR
Not restricted

IMDG
Not restricted

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

<table>
<thead>
<tr>
<th>Product name</th>
<th>2-Ethylhexanoic acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship type</td>
<td>3</td>
</tr>
<tr>
<td>Pollution category</td>
<td>Y</td>
</tr>
</tbody>
</table>

SECTION 15: Regulatory information
15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

**Regulation 1272/2008, Annex VI**

**2-Ethylhexanoic acid, CAS: 149-57-5**

- **Classification**: Repr. 2; H361d
- **Hazard pictograms**: GHS08 Health hazard***
- **Signal word**: Warning
- **Hazard statements**: H361d

**DI 2012/18/EU (Seveso III)**

- **Category**: not subject

**DI 1999/13/EC (VOC Guideline)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanoic acid</td>
<td>not subject</td>
</tr>
<tr>
<td>CAS: 149-57-5</td>
<td></td>
</tr>
</tbody>
</table>

**Other regulations**

2-Ethylhexanoic acid, CAS: 149-57-5

DI 92/85/EEC ***

**International Inventories**

2-Ethylhexanoic acid, CAS: 149-57-5

- AICS (AU)***
- DSL (CA)***
- IECSC (CN)***
- EC-No. 2057436 (EU)***
- ENCS (2)-608 (JP)***
- ISHL (2)-608 (JP)***
- KECI KE-13740 (KR)***
- INSO (MX)***
- PICCS (PH)***
- TSCA (US)***
- NZIoC (NZ)***
- TCSI (TW)***

**National regulatory information Great Britain**

- **Releases to air (Pollution Inventory Substances)**
  not subject

- **Releases to water (Pollution Inventory Substances)**
  not subject

- **Releases to sewer (Pollution Inventory Substances)**
  not subject
  For details and further information please refer to the original regulation
15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3
H361d: Suspected of damaging the unborn child.

Abbreviations
A table of terms and abbreviations can be found under the following link:

Training advice
For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on Oxea owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet
Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage (www.oxea-chemicals.com).

Disclaimer
For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Oxea makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet

Annex to the extended Safety Data Sheet (eSDS)

General information
Other combinations of operational conditions may also be safe. Please contact Oxea in case your local operational conditions differ from the ones described below and you are unsure if they are also safe.

Operational conditions and risk management measures
Wear suitable coveralls to prevent exposure to skin, where direct contact with substances is possible. Wear suitable eye protection, where direct contact (e.g. splashes) with substance is possible. Wear suitable gloves tested to EN 374 for activities, where direct contact with substance is possible. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures.
### Exposure scenario identification

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Industrial use resulting in manufacture of another substance (use of intermediates)</td>
</tr>
<tr>
<td>2</td>
<td>Formulation &amp; (re)packing of substances and mixtures</td>
</tr>
<tr>
<td>3</td>
<td>Use in laboratories</td>
</tr>
<tr>
<td>4</td>
<td>Use in laboratories</td>
</tr>
<tr>
<td>5</td>
<td>Functional Fluids</td>
</tr>
<tr>
<td>6</td>
<td>Functional Fluids</td>
</tr>
<tr>
<td>7</td>
<td>Functional Fluids</td>
</tr>
</tbody>
</table>

**Short title of the exposure scenario**

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

### List of use descriptors

**Sector of uses [SU]**

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

**Process categories [PROC]**

PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

**Environmental release categories [ERC]**

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

**Product characteristics**

Refer to attached safety data sheets

### Further explanations

**Industrial use**

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

### Contributing Scenarios

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contributing exposure scenario controlling environmental exposure for ERC 6a</td>
</tr>
</tbody>
</table>

**Further specification**

release factors for (Sp)ERC were modified
assessment tool used: Chesar 2.2

**Amounts used**

Daily amount per site: 25 to
Annual amount per site: 2500 to

**Frequency and duration of use**

Covers use up to: 100 days

**Environment factors not influenced by risk management**

River flow rate: 18000 m³/d
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

**Technical conditions and measures at process level (source) to prevent release**

Release fraction to air from process: 0.1 %
### SAFETY DATA SHEET

2-Ethylhexanoic acid  
10040  

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing exposure scenario controlling worker exposure for PROC 1</td>
<td></td>
</tr>
</tbody>
</table>

**Further specification**  
assessment tool used: Chesar 2.2

**Product characteristics**  
Covers percentage substance in the product up to 100%  
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**  
8 h (full shift)

**Human factors not influenced by risk management**  
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

**Other given operational conditions affecting workers exposure**  
Indoor and outdoor use

**Technical conditions and measures to control dispersion from source towards the worker**  
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing exposure scenario controlling worker exposure for PROC 2</td>
<td></td>
</tr>
</tbody>
</table>

**Further specification**  
assessment tool used: Chesar 2.2

**Product characteristics**  
Covers percentage substance in the product up to 100%  
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**  
8 h (full shift)

**Human factors not influenced by risk management**  
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

**Other given operational conditions affecting workers exposure**  
Indoor and outdoor use

**Technical conditions and measures to control dispersion from source towards the worker**  
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing exposure scenario controlling worker exposure for PROC 3</td>
<td></td>
</tr>
</tbody>
</table>

**Further specification**  
assessment tool used: Chesar 2.2

**Product characteristics**  
Covers percentage substance in the product up to 100%  
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**  
8 h (full shift)

**Human factors not influenced by risk management**  
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

Number of the contributing scenario

Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 %
Liquid, vapour pressure < 0.5 kPa at STP

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

Exposure estimation and reference to its source

Environment
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEC</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh Water (Pelagic)</td>
<td>0.16</td>
<td>0.43</td>
</tr>
<tr>
<td>Fresh Water (Sediment)</td>
<td>2.76</td>
<td>0.43</td>
</tr>
<tr>
<td>Marine Water (Pelagic)</td>
<td>0.02</td>
<td>0.43</td>
</tr>
<tr>
<td>Marine Water (Sediment)</td>
<td>0.28</td>
<td>0.43</td>
</tr>
<tr>
<td>Agricultural Soil</td>
<td>0.49</td>
<td>0.46</td>
</tr>
<tr>
<td>Sewage Treatment Plant</td>
<td>1.56</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d].

<table>
<thead>
<tr>
<th>Proc</th>
<th>EE(inhal)</th>
<th>EE(derm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.06</td>
<td>0.03</td>
</tr>
<tr>
<td>2</td>
<td>6.01</td>
<td>0.07</td>
</tr>
<tr>
<td>3</td>
<td>5.41</td>
<td>0.03</td>
</tr>
<tr>
<td>8b</td>
<td>5.41</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR = RCR(inhal) + RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

<table>
<thead>
<tr>
<th>Proc</th>
<th>RCR(inhal)</th>
<th>RCR(derm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.004</td>
<td>0.02</td>
</tr>
<tr>
<td>2</td>
<td>0.43</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Great Britain (E-GB) /EN
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Proc 3
RCR(inhal): 0.39 ; RCR(derm): 0.02
Proc 8b
RCR(inhal): 0.39 ; RCR(derm): 0.34

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES
Usage of release factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

Number of the ES 2
Short title of the exposure scenario
Formulation & (re)packing of substances and mixtures

List of use descriptors

Sector of uses [SU]
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Environmental release categories [ERC]
ERC2: Formulation of preparations (mixtures)

Processes and activities covered by the exposure scenario
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 2

Further specification
Sperc EFCC 2.1.c.v1, assessment tool used: Chesar 2.2.

Amounts used
Daily amount per site: 4.6 to
Annual amount per site: 1000 to
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6 .00

Fraction of Regional tonnage used locally: 1

Frequency and duration of use
Covers use up to: 220 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 0 %
Release fraction to wastewater from process: 0.5 %
Release fraction to soil from process: 0%

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

Number of the contributing scenario 2
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 3
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour),

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

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

Number of the contributing scenario
5
Contributing exposure scenario controlling worker exposure for PROC 4

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

Number of the contributing scenario
6
Contributing exposure scenario controlling worker exposure for PROC 5

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
Avoid carrying out activities involving exposure for more than 4 hours

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

Number of the contributing scenario
7
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
assessment tool used: Chesar 2.2

**Product characteristics**
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
Avoid carrying out activities involving exposure for more than 1 hour

**Human factors not influenced by risk management**
Area potentially exposed: corresponds to 2 hands (960 cm²)

**Other given operational conditions affecting workers exposure**
Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
provide a good standard of controlled ventilation (5 to 10 air changes per hour)

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

---

**Number of the contributing scenario**

8

**Contributing exposure scenario controlling worker exposure for PROC 8b**

---

Further specification

assessment tool used: Chesar 2.2

**Product characteristics**
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
Avoid carrying out activities involving exposure for more than 4 hours

**Human factors not influenced by risk management**
Area potentially exposed: corresponds to 2 hands (960 cm²)

**Other given operational conditions affecting workers exposure**
Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

---

**Number of the contributing scenario**

9

**Contributing exposure scenario controlling worker exposure for PROC 9**

---

Further specification

assessment tool used: Chesar 2.2

**Product characteristics**
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
8 h (full shift)

**Human factors not influenced by risk management**
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

**Other given operational conditions affecting workers exposure**
Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

---

**Exposure estimation and reference to its source**

**Environment**
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Fresh Water (Pelagic)  PEC: 0.14 mg/l; RCR: 0.40
Fresh Water (Sediment)  PEC: 2.52 mg/kg dw; RCR: 0.40
Marine Water (Pelagic)  PEC: 0.01 mg/l; RCR: 0.40
Marine Water (Sediment)  PEC: 0.25 mg/kg dw; RCR: 0.40
Agricultural Soil  PEC: 0.44 mg/kg dw; RCR: 0.42
Sewage Treatment Plant (Effluent)  PEC: 1.42 mg/l; RCR: 0.02

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios.

Proc 1  EE(inhal): 0.06 ; EE(derm): 0.03
Proc 2  EE(inhal): 6.01 ; EE(derm): 0.07
Proc 3  EE(inhal): 5.41 ; EE(derm): 0.03
Proc 4  EE(inhal): 9.01 ; EE(derm): 0.34
Proc 5  EE(inhal): 5.41 ; EE(derm): 0.69
Proc 8a  EE(inhal): 3.61 ; EE(derm): 0.69
Proc 8b  EE(inhal): 5.41 ; EE(derm): 0.69
Proc 9  EE(inhal): 9.01 ; EE(derm): 0.34

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) + RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1  RCR(inhal): 0.004 ; RCR(derm): 0.017
Proc 2  RCR(inhal): 0.43 ; RCR(derm): 0.03
Proc 3  RCR(inhal): 0.39 ; RCR(derm): 0.02
Proc 4  RCR(inhal): 0.64 ; RCR(derm): 0.17
Proc 5  RCR(inhal): 0.39 ; RCR(derm): 0.34
Proc 8a  RCR(inhal): 0.26 ; RCR(derm): 0.34
Proc 8b  RCR(inhal): 0.39 ; RCR(derm): 0.34
Proc 9  RCR(inhal): 0.62 ; RCR(derm): 0.17

Number of the ES  3
Short title of the exposure scenario

Use in laboratories

List of use descriptors

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6.00

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

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use of the substance within laboratory settings, including material transfers and equipment cleaning

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing exposure scenario controlling environmental exposure for ERC 4</td>
<td></td>
</tr>
</tbody>
</table>

Further specification
release factors for (Sp)ERC were modified, assessment tool used: Chesar 2.2.

Amounts used
Daily amount per site: 0.01 to
Annual amount per site: 1 to
Fraction of Regional tonnage used locally: 1

Frequency and duration of use
Covers use up to: 100 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 1 %
Release fraction to wastewater from process: 0.5 %
Release fraction to soil from process: 0.1%

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m3/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

<table>
<thead>
<tr>
<th>Number of the contributing scenario</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing exposure scenario controlling worker exposure for PROC 15</td>
<td></td>
</tr>
</tbody>
</table>

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal). provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Exposure estimation and reference to its source

Environment
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

- Fresh Water (Pelagic) PEC: 0.0005 mg/l; RCR: 0.001
- Fresh Water (Sediment) PEC: 0.009 mg/kg dw; RCR: 0.001
- Marine Water (Pelagic) PEC: 0.00005 mg/l; RCR: 0.001
- Marine Water (Sediment) PEC: 0.0009 mg/kg dw; RCR: 0.001
- Agricultural Soil PEC: 0.001 mg/kg dw; RCR: 0.001
- Sewage Treatment Plant (Effluent) PEC: 0.003 mg/l; RCR: 0.00004

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 15 EE(inhal): 3.00 ; EE(derm): 0.02

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) + RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 15 RCR(inhal): 0.22 ; RCR(derm): 0.009

Number of the ES  4

Short title of the exposure scenario

Use in laboratories

List of use descriptors

Sector of uses [SU]
SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]
PROC15: Use as laboratory reagent

Environmental release categories [ERC]
ERC8a: Wide dispersive indoor use of processing aids in open systems

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use of small quantities within laboratory settings, including material transfers and equipment cleaning

Further explanations
Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Contributing Scenarios

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 8a

Further specification
assessment tool used: Chesar 2.2.

Amounts used
daily wide dispersive use: 0.0000005 to/d
Amounts used (EU): 1 to/a
Fraction of Regional tonnage used locally: 0.002
Fraction of EU tonnage used in region: 0.1

Frequency and duration of use
Covers use up to: 365 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure
Indoor use
Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 100 %
Release fraction to wastewater from process: 100 %
Release fraction to soil from process: 0%

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

Number of the contributing scenario 2
Contributing exposure scenario controlling worker exposure for PROC 15

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 100 % (unless stated differently)
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor use
Technical conditions and measures to control dispersion from source towards the worker
Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal). provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

Exposure estimation and reference to its source

Environment
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio
Fresh Water (Pelagic)  PEC: 0.0002 mg/l; RCR: 0.0006
Fresh Water (Sediment) PEC: 0.004 mg/kg dw; RCR: 0.0006
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Marine Water (Pelagic) PEC: 0.00002 mg/l; RCR: 0.0006
Marine Water (Sediment) PEC: 0.00004 mg/kg dw; RCR: 0.0006
Agricultural Soil PEC: 0.00002 mg/kg dw; RCR: 0.0002
Sewage Treatment Plant (Effluent) PEC: 0.00003 mg/l; RCR: 0.00005

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 15 EE(inhal): 6.01 ; EE(derm): 0.03

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 15 RCR(inhal): 0.43 ; RCR(derm): 0.02

Number of the ES 5

List of use descriptors

Sector of uses [SU]
SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Environmental release categories [ERC]
ERC7: Industrial use of substances in closed systems

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers

Further explanations
Industrial use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios
Number of the contributing scenario | 1
Contributing exposure scenario controlling environmental exposure for ERC 7

Further specification
release factors for (Sp)ERC were modified, assessment tool used: Chesar 2.2.

Amounts used
daily amount per site: 2 to
annual amount per site: 200 to
fraction of Regional tonnage used locally: 1

Frequency and duration of use
Covers use up to: 100 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d Local freshwater dilution factor: 10 Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure
Indoor/Outdoor use
Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 1 %
Release fraction to wastewater from process: 1 %
Release fraction to soil from process: 1 %

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

---

Number of the contributing scenario | 2
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor and outdoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour).

---

Number of the contributing scenario | 3
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

Number of the contributing scenario 5
Contributing exposure scenario controlling worker exposure for PROC 4

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker provide a good standard of controlled ventilation (5 to 10 air changes per hour)

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

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

Number of the contributing scenario 6
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
Avoid carrying out activities involving exposure for more than 4 hours

Human factors not influenced by risk management
Area potentially exposed: corresponds to 2 hands (960 cm²)
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

**Number of the contributing scenario**
**Contribution exposure scenario controlling worker exposure for PROC 8b**

<table>
<thead>
<tr>
<th>Further specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>assessment tool used: Chesar 2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 25 %</td>
</tr>
<tr>
<td>Liquid, vapour pressure &lt; 0.5 kPa at STP</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
<tr>
<td>8 h (full shift)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area potentially exposed: corresponds to 2 hands (960 cm²)</td>
</tr>
</tbody>
</table>

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

**Number of the contributing scenario**
**Contribution exposure scenario controlling worker exposure for PROC 9**

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 25 %</td>
</tr>
<tr>
<td>Liquid, vapour pressure &lt; 0.5 kPa at STP</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
<tr>
<td>8 h (full shift)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area potentially exposed: corresponds to palm of 2 hands (480 cm²)</td>
</tr>
</tbody>
</table>

Other given operational conditions affecting workers exposure
Indoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).

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

**Exposure estimation and reference to its source**

<table>
<thead>
<tr>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEC = predicted environmental concentration (local); RCR = risk characterisation ratio</td>
</tr>
<tr>
<td>Fresh Water (Pelagic) PEC: 0.13 mg/l; RCR: 0.35</td>
</tr>
<tr>
<td>Fresh Water (Sediment) PEC: 2.21 mg/kg dw; RCR: 0.35</td>
</tr>
<tr>
<td>Marine Water (Pelagic) PEC: 0.01 mg/l; RCR: 0.35</td>
</tr>
<tr>
<td>Marine Water (Sediment) PEC: 0.22 mg/kg dw; RCR: 0.35</td>
</tr>
<tr>
<td>Agricultural Soil PEC: 0.39 mg/kg dw; RCR: 0.37</td>
</tr>
<tr>
<td>Sewage Treatment Plant (Effluent) PEC: 1.25 mg/l; RCR: 0.02</td>
</tr>
</tbody>
</table>

**Human exposure prediction (oral, dermal, inhalative)**
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or
long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

<table>
<thead>
<tr>
<th>Proc</th>
<th>EE(inhal)</th>
<th>EE(derm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proc 1</td>
<td>0.04 : 0.02</td>
<td></td>
</tr>
<tr>
<td>Proc 2</td>
<td>3.61 : 0.04</td>
<td></td>
</tr>
<tr>
<td>Proc 3</td>
<td>7.57 : 0.02</td>
<td></td>
</tr>
<tr>
<td>Proc 4</td>
<td>5.41 : 0.21</td>
<td></td>
</tr>
<tr>
<td>Proc 5</td>
<td>6.49 : 0.41</td>
<td></td>
</tr>
<tr>
<td>Proc 6</td>
<td>5.41 : 0.41</td>
<td></td>
</tr>
<tr>
<td>Proc 7</td>
<td>5.41 : 0.21</td>
<td></td>
</tr>
</tbody>
</table>

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR = RCR(inhal) + RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

<table>
<thead>
<tr>
<th>Proc</th>
<th>RCR(inhal)</th>
<th>RCR(derm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proc 1</td>
<td>0.003 : 0.01</td>
<td></td>
</tr>
<tr>
<td>Proc 2</td>
<td>0.26 : 0.02</td>
<td></td>
</tr>
<tr>
<td>Proc 3</td>
<td>0.54 : 0.01</td>
<td></td>
</tr>
<tr>
<td>Proc 4</td>
<td>0.39 : 0.10</td>
<td></td>
</tr>
<tr>
<td>Proc 5</td>
<td>0.46 : 0.21</td>
<td></td>
</tr>
<tr>
<td>Proc 6</td>
<td>0.39 : 0.21</td>
<td></td>
</tr>
<tr>
<td>Proc 7</td>
<td>0.39 : 0.10</td>
<td></td>
</tr>
</tbody>
</table>

Number of the ES 6

Short title of the exposure scenario

Functional Fluids

Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC5: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems

Environmental release categories [ERC]

ERC9a: Wide dispersive indoor use of substances in closed systems

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers

Further explanations

Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Contributing Scenarios

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 9a

Further specification
release factors for (Sp)ERC were modified, assessment tool used: Chesar 2.2.

Amounts used
daily wide dispersive use: 0.0002 to/d
Amounts used (EU): 100 to/a
Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 0.002

Frequency and duration of use
Covers use up to: 100 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure
Indoor use

Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 1 %
Release fraction to wastewater from process: 0.5 %
Release fraction to soil from process: 0.1%

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

Number of the contributing scenario
2

Contributing exposure scenario controlling worker exposure for PROC 1

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure
Indoor and outdoor use

Technical conditions and measures to control dispersion from source towards the worker
provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario
3

Contributing exposure scenario controlling worker exposure for PROC 2

Further specification
assessment tool used: Chesar 2.2

Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP

Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

**Other given operational conditions affecting workers exposure**
- Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
- provide a good standard of controlled ventilation (5 to 10 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

---

**Number of the contributing scenario** 4
**Contributing exposure scenario controlling worker exposure for PROC 3**

**Further specification**
- assessment tool used: Chesar 2.2

**Product characteristics**
- Covers percentage substance in the product up to 25 %
- Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
- 8 h (full shift)

**Human factors not influenced by risk management**
- Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

**Other given operational conditions affecting workers exposure**
- Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
- provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

---

**Number of the contributing scenario** 5
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Further specification**
- assessment tool used: Chesar 2.2

**Product characteristics**
- Covers percentage substance in the product up to 25 %
- Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
- Avoid carrying out activities involving exposure for more than 1 hour

**Human factors not influenced by risk management**
- Area potentially exposed: corresponds to 2 hands (960 cm²)

**Other given operational conditions affecting workers exposure**
- Indoor use

**Technical conditions and measures to control dispersion from source towards the worker**
- provide a good standard of controlled ventilation (5 to 10 air changes per hour).

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

---

**Number of the contributing scenario** 6
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Further specification**
- assessment tool used: Chesar 2.2

**Product characteristics**
- Covers percentage substance in the product up to 25 %
- Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**
- Avoid carrying out activities involving exposure for more than 4 hours
2-Ethylhexanoic acid
10040

Version / Revision 6.00

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

Number of the contributing scenario
Contributing exposure scenario controlling worker exposure for
PROC 20

Further specification
assessment tool used: Chesar 2.2
Product characteristics
Covers percentage substance in the product up to 25 %
Liquid, vapour pressure < 0.5 kPa at STP
Frequency and duration of use
8 h (full shift)

Human factors not influenced by risk management
Area potentially exposed: corresponds to palm of 2 hands (480 cm²)
Other given operational conditions affecting workers exposure
Indoor use
Technical conditions and measures to control dispersion from source towards the worker
provide a good standard of controlled ventilation (5 to 10 air changes per hour).
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

Exposure estimation and reference to its source

Environment
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio
Fresh Water (Pelagic) PEC: 0.0002 mg/l; RCR: 0.0006
Fresh Water (Sediment) PEC: 0.004 mg/kg dw; RCR: 0.0006
Marine Water (Pelagic) PEC: 0.00002 mg/l; RCR: 0.0006
Marine Water (Sediment) PEC: 0.0004 mg/kg dw; RCR: 0.0006
Agricultural Soil PEC: 0.0002 mg/kg dw; RCR: 0.0002
Sewage Treatment Plant (Effluent) PEC: 0.00006 mg/l; RCR: 0.0000009

Human exposure prediction (oral, dermal, inhalative)
Oral exposure is not expected to occur. EE(inhal): Estimated inhalative long-term exposure [mg/m³]; EE(derm): Estimated dermal long-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

Proc 1 EE(inhal): 0.04 ; EE(derm): 0.02
Proc 2 EE(inhal): 5.41 ; EE(derm): 0.08
Proc 3 EE(inhal): 7.57 ; EE(derm): 0.04
Proc 8a EE(inhal): 5.41 ; EE(derm): 0.82
Proc 9 EE(inhal): 6.49 ; EE(derm): 0.41
Proc 20 EE(inhal): 5.41 ; EE(derm): 0.10

Risk characterisation
RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) + RCR(derm). Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR’s given correspond in each case to the most conservative
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

calculated values.

<table>
<thead>
<tr>
<th>Process</th>
<th>RCR(inhal)</th>
<th>RCR(derm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proc 1</td>
<td>0.003</td>
<td>0.01</td>
</tr>
<tr>
<td>Proc 2</td>
<td>0.39</td>
<td>0.04</td>
</tr>
<tr>
<td>Proc 3</td>
<td>0.54</td>
<td>0.02</td>
</tr>
<tr>
<td>Proc 8a</td>
<td>0.39</td>
<td>0.41</td>
</tr>
<tr>
<td>Proc 9</td>
<td>0.46</td>
<td>0.41</td>
</tr>
<tr>
<td>Proc 20</td>
<td>0.39</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Number of the ES  7

Short title of the exposure scenario
Functional Fluids

List of use descriptors

Sector of uses [SU]
SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems

Environmental release categories [ERC]
ERC9b: Wide dispersive outdoor use of substances in closed systems

Product characteristics
Refer to attached safety data sheets

Processes and activities covered by the exposure scenario
Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers

Further explanations
Professional use
Assumes use at not more than 20°C above ambient temperature (unless stated differently)
Human health hazard assessment:
see attached exposure scenario No: 6

Contributing Scenarios

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 9b

Further specification
release factors for (Sp)ERC were modified, assessment tool used: Chesar 2.2.
Amounts used
daily wide dispersive use: 0.0002 to/d
Amounts used (EU): 100 to/a
SAFETY DATA SHEET

2-Ethylhexanoic acid
10040

Version / Revision 6 .00

Fraction of EU tonnage used in region: 0.1
Fraction of Regional tonnage used locally: 0.002

Frequency and duration of use
Covers use up to: 100 days

Environment factors not influenced by risk management
River flow rate: 18000 m³/d
Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure
Outdoor use

Technical conditions and measures at process level (source) to prevent release
Release fraction to air from process: 1 %
Release fraction to wastewater from process: 0.5 %
Release fraction to soil from process: 0.1%

Conditions and measures related to municipal sewage treatment plant
Size of municipal sewage system/ treatment plant (m³/d): 2000
The minimum grade of elimination in the sewage plant is (%): 87.5

Conditions and measures related to external treatment of waste for disposal
Dispose of waste product or used containers according to local regulations

Exposure estimation and reference to its source

Environment
PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic) PEC: 0.0002 mg/l; RCR: 0.0006
Fresh Water (Sediment) PEC: 0.004 mg/kg dw; RCR: 0.0006
Marine Water (Pelagic) PEC: 0.00002 mg/l; RCR: 0.0006
Marine Water (Sediment) PEC: 0.0004 mg/kg dw; RCR: 0.0006
Agricultural Soil PEC: 0.0002 mg/kg dw; RCR: 0.0002
Sewage Treatment Plant (Effluent) PEC: 0.00006 mg/l; RCR: 0.0000009