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

1.1. Product identifier

Identification of the substance/preparation

2-ethylhexanal

CAS-No 123-05-7
EC No. 204-596-5
Registration number (REACH) 01-2119475603-36

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

Identified uses
Transported isolated intermediate (1907/2006)

Uses advised against
None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information
Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.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)

- Flammable liquid Category 3, H226
- Skin sensitization Category 1B, H317
- Reproductive toxicity Category 2, H361

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

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).
### SAFETY DATA SHEET

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**Version / Revision** 4

---

#### Hazard pictograms

<table>
<thead>
<tr>
<th>Pictogram</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="" /></td>
<td>Warning</td>
</tr>
</tbody>
</table>

#### Signal word

**Warning**

#### Hazard statements

- **H226**: Flammable liquid and vapour.
- **H317**: May cause an allergic skin reaction.
- **H361**: Suspected of damaging fertility or the unborn child.

#### Precautionary statements

- **P201**: Obtain special instructions before use.
- **P202**: Do not handle until all safety precautions have been read and understood.
- **P210**: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- **P261**: Avoid breathing gas/mist/vapours.
- **P281**: Use personal protective equipment as required
- **P363**: Wash contaminated clothing before reuse.
- **P403 + P235**: Store in a well ventilated place. Keep cool.

#### 2.3. Other hazards

Vapours may form explosive mixture with air  
Components of the product may be absorbed into the body by inhalation and ingestion

**PBT and vPvB assessment**  
Not required

---

### SECTION 3: Composition / information on ingredients

#### 3.1. Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>REACCh-No</th>
<th>1272/2008/EC</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanal</td>
<td>123-05-7</td>
<td>01-2119475603-36</td>
<td>Flam. Liq. 3; H226 Skin Sens. 1B; H317 Repr. 2; H361</td>
<td>&gt; 98,5</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.
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Eyes
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Obtain medical attention.

Ingestion
Do not induce vomiting without medical advice. Call a physician immediately.

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

Main symptoms
shortness of breath, abdominal pain, vomiting, nausea, cough.

Special hazard
Lung oedema, Lung irritation, Dermatitis.

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. In case of lung irritation, first treatment with cortisone spray.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
alcohol-resistant 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
Vapours may form explosive mixture with air

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
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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.

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. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. 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

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. Refill and handle product only in closed system.

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
acids and bases
amines
oxidizing agents
oxygen
reducing 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. Vapours may form explosive mixture with air. The product will oxidize in air and release heat. The pressure in sealed containers can increase under the influence of heat.
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Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture. Oxidization creates acids and peroxides, that may lead to corrosive damages in storage and handling equipment.

Suitable material
stainless steel, aluminium

Unsuitable material
mild steel, iron

Temperature class
T4

7.3. Specific end use(s)
Transported isolated intermediate (1907/2006)

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
This substance is registered as intermediate under strictly controlled conditions.

2-Ethylhexanal, CAS: 123-05-7

Workers

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN(M)EL - long-term exposure - systemic effects - Inhalation</td>
<td>1,53 mg/m³</td>
</tr>
<tr>
<td>DN(M)EL - long-term exposure - systemic effects - Dermal</td>
<td>3,62 mg/kg bw/day</td>
</tr>
</tbody>
</table>

General population

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN(M)EL - long-term exposure - systemic effects - Inhalation</td>
<td>0,64 mg/m³</td>
</tr>
<tr>
<td>DN(M)EL - long-term exposure - systemic effects - Dermal</td>
<td>0,37 mg/kg bw/day</td>
</tr>
<tr>
<td>DN(M)EL - long-term exposure - systemic effects - Oral</td>
<td>0,18 mg/kg bw/day</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Special adaptations (REACH)
The substance has been registered as an transported isolated intermediate and must be handled throughout its life cycle under strictly controlled conditions in accordance with Article 18.4, REACH.
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 4</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0,55 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>approx 80 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>

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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
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Appearance: liquid
Colour: colourless
Odour: strong
Odour threshold: No data available
pH: No data available
Melting point/range: < -100 °C
Boiling point/range: 159.6 °C @ 1013 hPa
Flash point: 44 °C
Method: closed cup
Evaporation rate: No data available
Flammability (solid, gas): Does not apply, the substance is a liquid
Lower explosion limit: 0.9 Vol %
Upper explosion limit: 7.2 Vol %

Vapour pressure

<table>
<thead>
<tr>
<th>Values [hPa]</th>
<th>Values [kPa]</th>
<th>Values [atm]</th>
<th>@ °C</th>
<th>@ °F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3</td>
<td>0,2</td>
<td>0,002</td>
<td>20</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

Vapour density: 4.4 (Air = 1) @ 20 °C (68 °F)

Relative density

<table>
<thead>
<tr>
<th>Values</th>
<th>@ °C</th>
<th>@ °F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.819</td>
<td>20</td>
<td>68</td>
<td>DIN 51757</td>
</tr>
</tbody>
</table>

Solubility: 0.39 g/l @ 20 °C, in water

Autoignition temperature: 190 °C
Method: DIN 51794
Decomposition temperature: No data available
Viscosity: 0.951 mPa’s @ 20 °C
Method: dynamic, DIN 51562

Explosive properties: Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

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

9.2. Other information

Molecular weight: 128.22
Molecular formula: C8 H16 O
Refractive index: 1.416 @ 20 °C
Surface tension: 47.1 mN/m (0.73 g/l @ 20°C (68°F)), OECD 115

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 may occur. May form explosive peroxides. When finely distributed, self-ignition is possible. Vapours may form explosive mixture with air. Auto ignition on large surfaces. Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.

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, acids, oxidizing agents, oxygen, reducing 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

### Acute toxicity

<table>
<thead>
<tr>
<th>2-Ethylhexanal (123-05-7)</th>
<th>Endpoint</th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>2600 mg/kg</td>
<td>rat, male/female</td>
<td>OECD 401</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>&gt; 16440 mg/kg</td>
<td>rat, male/female</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50</td>
<td>&gt; 6.83 mg/l (4h)</td>
<td>rat, male/female</td>
<td>OECD 403</td>
</tr>
</tbody>
</table>

2-Ethylhexanal, CAS: 123-05-7

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-Ethylhexanal (123-05-7)</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>irritating</td>
<td>OECD 404</td>
</tr>
<tr>
<td>Eyes</td>
<td>rabbit</td>
<td>No eye irritation</td>
<td>OECD 405</td>
</tr>
</tbody>
</table>

2-Ethylhexanal, CAS: 123-05-7

Assessment
The available data lead to the classification given in section 2
For respiratory irritation, no data are available

### Sensitization

<table>
<thead>
<tr>
<th>2-Ethylhexanal (123-05-7)</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>guinea pig</td>
<td>sensitizing</td>
<td>OECD 406</td>
</tr>
</tbody>
</table>

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Assessment
The available data lead to a classification as skin sensitizer (see section 2)
For respiratory sensitization, no data are available

<table>
<thead>
<tr>
<th>Subacute, subchronic and prolonged toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanal (123-05-7)</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Subacute toxicity</td>
</tr>
</tbody>
</table>

2-Ethylhexanal, CAS: 123-05-7
Assessment
Based on available data, the classification criteria are not met for:
STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity
2-Ethylhexanal (123-05-7)
<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>Salmonella typhimurium</td>
<td>negative</td>
<td>Ames test</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>mouse</td>
<td>negative</td>
<td>OECD 474</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>NOAEL 300 mg/kg/d</td>
<td>rat, parental</td>
<td>Oral</td>
<td>read across</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>NOAEL 100 mg/kg/d</td>
<td>rat, 1. Generation, male/female</td>
<td>Oral</td>
<td>read across</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL 300.9 mg/kg/d</td>
<td>rat</td>
<td>OECD 414, Oral</td>
<td>Maternal toxicity</td>
</tr>
</tbody>
</table>

2-Ethylhexanal, CAS: 123-05-7
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 did not show mutagenic effects

2-Ethylhexanal, CAS: 123-05-7
Main symptoms
shortness of breath, abdominal pain, vomiting, nausea, cough.
Other adverse effects
Components of the product may be absorbed into the body by inhalation and ingestion.
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
2-Ethylhexanal (123-05-7)
<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncorhynchus mykiss (rainbow)</td>
<td>96h</td>
<td>LC50: 5.5 mg/l</td>
<td>OECD 203</td>
</tr>
</tbody>
</table>
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12.2. Persistence and degradability

2-Ethylhexanal, CAS: 123-05-7
Biodegradation
71.8% (28 d), activated sludge (domestic), aerobic, OECD 301 F.

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>2-Ethylhexanal (123-05-7)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>log Pow</td>
<td>3.07</td>
<td>measured, OECD 107</td>
<td></td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>2-Ethylhexanal (123-05-7)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
<td>47.1 mN/m (0.73 g/l @ 20°C (68°F))</td>
<td>OECD 115</td>
<td></td>
</tr>
</tbody>
</table>

12.5. Results of PBT and vPvB assessment

2-Ethylhexanal, CAS: 123-05-7
PBT and vPvB assessment
Not required

12.6. Other adverse effects

2-Ethylhexanal, CAS: 123-05-7
No data available

Note
Avoid release to the environment.

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

ADR/RID

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group
14.5. Environmental hazards
14.6. Special precautions for user

ADR Tunnel restriction code
Classification Code
Hazard Number

ADR Container

ADN

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group
14.5. Environmental hazards
14.6. Special precautions for user

Classification Code
Hazard Number

ADN Container

ADN

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group
14.5. Environmental hazards
14.6. Special precautions for user

Subsidiary Risk
Classification Code

ADN Tanker

ICAO-TI / IATA-DGR

14.1. UN number
14.2. UN proper shipping name
14.3. Transport hazard class(es)
14.4. Packing group
14.5. Environmental hazards
14.6. Special precautions for user

Subsidiary Risk
Classification Code
Hazard Number

no data available
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IMDG

14.1. UN number UN 1191
14.2. UN proper shipping name Octyl aldehydes
14.3. Transport hazard class(es) 3
14.4. Packing group III
14.5. Environmental hazards no
14.6. Special precautions for user EmS F-E, S-D
14.7. Transport in bulk according to Annex Il of MARPOL and the IBC Code

Product name Octyl aldehydes
Ship type 3
Pollution category Y

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI
not listed

DI 2012/18/EU (Seveso III)
Category Annex I, part 1:
P5a - c; depending on conditions

DI 1999/13/EC (VOC Guideline)

<table>
<thead>
<tr>
<th>Component</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexanal</td>
<td>regulated</td>
</tr>
<tr>
<td>CAS: 123-05-7</td>
<td></td>
</tr>
</tbody>
</table>

International Inventories

2-Ethylhexanal, CAS: 123-05-7
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2045965 (EU)
ENCS (2)-494 (JP)
ISHL (2)-494 (JP)
ISHL 2-(8)-34 (JP)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC-NZ May be used as single component chemical
TCSI (TW)
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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) is not required.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3
H226: Flammable liquid and vapour.
H317: May cause an allergic skin reaction.
H361: Suspected of damaging fertility or 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 OQ 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 OQ homepage
(www.chemicals.oq.com).
The annex is not required because the substance is registered as an intermediate under REACh

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End of Safety Data Sheet