SAFETY DATA SHEET

Isovaleraldehyde
10150
Version / Revision 4
Supersedes Version 3.00
Revision Date 30-Apr-2020
Issuing date 15-May-2020

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

1.1. Product identifier

Identification of the substance/preparation

Isovaleraldehyde

Chemical Name 3-Methylbutanal
CAS-No 590-86-3
EC No. 209-691-5
Registration number (REACH) 01-2119474890-30

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
Identification 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 2, H225
Serious eye damage/eye irritation Category 2, H319
Skin sensitization Category 1, H317
Target Organ Systemic Toxicant - Single exposure Category 3, H335
Environmental hazard Aquatic Chronic 2; H411

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

2.2. Label elements
SAFETY DATA SHEET

Isovaleraldehyde
10150

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

Hazard pictograms

Signal word: Danger

Hazard statements:
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary statements:
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P261: Avoid breathing gas/mist/vapours.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P363: Wash contaminated clothing before reuse.
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312: Call a POISON CENTRE/doctor if you feel unwell.
P391: Collect spillage.
P403 + P235: Store in a well ventilated place. Keep cool.

2.3. Other hazards
Vapours may form explosive mixture with air
Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback
Components of the product may be absorbed into the body by inhalation, ingestion and through the skin

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>REACh-No</th>
<th>1272/2008/EC</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isovaleraldehyde</td>
<td>590-86-3</td>
<td>01-2119474890-30</td>
<td>Flam. Liq. 2; H225 Eye Irit. 2; H319 Skin Sens. 1; H317 STOT SE 3; H335</td>
<td>&gt; 99,0</td>
</tr>
</tbody>
</table>
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. 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, vomiting, headache, nausea.

Special hazard
Lung oedema, Lung irritation.

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.
Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback.
Vapours may form explosive mixture with air.

5.3. Advice for firefighters

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

Precautions for firefighting
Keep people away from and upwind of fire. Cool containers / tanks with water spray. Dike and collect water used to fight fire. Water run-off can cause environmental damage.

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.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant). Water runoff can cause environmental damage.

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. Do not use compressed air for filling, discharging or handling.

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

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. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

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. Store at temperatures not exceeding 38 °C/ 100 °F.

Suitable material
stainless steel

Unsuitable material
mild steel

Temperature class
T3

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.

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>butyl-rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>according to EN 374: level 3</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0.3 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>approx 60 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**
If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. 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

**Appearance**  
liquid

**Colour**  
colourless

**Odour**  
strong

**Odour threshold**  
0.1 - 2 ppb

**pH**  
3.1 (15 g/l in water @ 20 °C (68 °F))

**Melting point/range**  
< -90 °C (Pour point)

**Boiling point/range**  
92 °C @ 1013 hPa

**Flash point**  
0.5 °C

**Method**  
EU A.9

**Evaporation rate**  
No data available

**Flammability (solid, gas)**  
Does not apply, the substance is a liquid

**Lower explosion limit**  
No data available

**Upper explosion limit**  
No data available

**Vapour pressure**

<table>
<thead>
<tr>
<th>Values [hPa]</th>
<th>Values [kPa]</th>
<th>Values [atm]</th>
<th>@ °C</th>
<th>@ °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>7.5</td>
<td>0.074</td>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>255</td>
<td>25.5</td>
<td>0.252</td>
<td>50</td>
<td>122</td>
</tr>
</tbody>
</table>

**Vapour density**  
2.96 (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>0.797</td>
<td>20</td>
<td>68</td>
<td>DIN 51757</td>
</tr>
</tbody>
</table>

**Solubility**  
15 g/l @ 20 °C, in water, OECD 105

**Log Pow**  
1.5 (measured), OECD 117

**Autoignition temperature**  
210 °C

**Method**  
DIN 51794

**Decomposition temperature**  
No data available

**Viscosity**  
0.69 mm²/s @ 20°C

**Method**  
OECD 114, kinematic

**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**  
86.13

**Molecular formula**  
C₅H₁₀O

**Refractive index**  
1.387 @ 20 °C

**Surface tension**  
46.1 mN/m (1 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. Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers. May form explosive peroxides. When finely distributed, self-ignition is possible. Vapours may form explosive mixture with air.

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.

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  Inhalation, Eye contact, Skin contact, Ingestion

| Acute toxicity | | | | |
|----------------|----------------|----------------|----------------|
| Isovaleraldehyde (590-86-3) | | | |
| Routes of Exposure | Endpoint | Values | Species | Method |
| Oral | LD50 | ~ 5740 mg/kg | rat, male/female | OECD 401 |
| Dermal | LD50 | 2534 mg/kg | rabbit | OECD 402 |
| Inhalative | LC50 | 42.7 mg/l (4h) | rat | OECD 403 |

Irritation and corrosion

| Irritation and corrosion | | | |
|--------------------------|----------------|----------------|
| Isovaleraldehyde (590-86-3) | | |
| Target Organ Effects | Species | Result | Method |
| Skin | rabbit | Mild skin irritation | OECD 404 |
| Eyes | rabbit | irritating | |
| Respiratory tract | mouse | RD50: 757-1000 ppm | |

Assessment

Based on available data, the classification criteria are not met for:

- Acute oral toxicity
- Acute dermal toxicity
- Acute inhalation toxicity

Sensitization

<table>
<thead>
<tr>
<th>Sensitization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Isovaleraldehyde (590-86-3)</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Isovaleraldehyde
10150

Target Organ Effects
Species: mouse guinea pig
Evaluation: sensitizing
Method: read across

Isovaleraldehyde, CAS: 590-86-3

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

Subacute, subchronic and prolonged toxicity
Isovaleraldehyde (590-86-3)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>no data available</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Carcinogenicity, Mutagenicity, Reproductive toxicity
Isovaleraldehyde (590-86-3)

<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>human lymphocytes</td>
<td>positive (without metabolic activation)</td>
<td>Similar to: OECD 479 (SCE)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>Salmonella typhimurium</td>
<td>negative</td>
<td>OECD 471 (Ames)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>mouse</td>
<td>negative</td>
<td>OECD 474 Chromosomal Aberration</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td></td>
<td>rat, male/female</td>
<td>negative</td>
<td>OECD 451, Inhalative</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td></td>
<td>mouse</td>
<td>negative</td>
<td>OECD 451, Inhalative</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>No data available</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Isovaleraldehyde, CAS: 590-86-3

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
Did not show carcinogenic or mutagenic effects in animal experiments

Isovaleraldehyde, CAS: 590-86-3

Main symptoms
shortness of breath, vomiting, nausea, headache.

Target Organ Systemic Toxicant - Single exposure
The available data lead to the classification given in section 2

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

STOT RE

Aspiration toxicity
According to experience not expected

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>Isovaleraldehyde (590-86-3)</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: 177 mg/l</td>
<td>84/449/EEC C.2</td>
</tr>
<tr>
<td>Pimephales promelas (fathead minnow)</td>
<td>96h</td>
<td>LC50: 3,25 mg/l</td>
<td>OECD 203</td>
</tr>
<tr>
<td>Desmodesmus subspicatus</td>
<td>72h</td>
<td>EC50: 80 mg/l (Biomass)</td>
<td>DIN 38412, part 9</td>
</tr>
<tr>
<td>Desmodesmus subspicatus</td>
<td>72h</td>
<td>EC50: 112,78 mg/l (Growth rate)</td>
<td>DIN 38412, part 9</td>
</tr>
</tbody>
</table>

Long term toxicity

<table>
<thead>
<tr>
<th>Isovaleraldehyde (590-86-3)</th>
<th>Type</th>
<th>Species</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic toxicity</td>
<td>Desmodesmus subspicatus</td>
<td>EC10: 32.62 mg/l (72 h) Biomass</td>
<td>DIN 38412 / part 9</td>
<td></td>
</tr>
<tr>
<td>Aquatic toxicity</td>
<td>Desmodesmus subspicatus</td>
<td>EC10: 71.89 mg/l (72 h) Growth inhibition</td>
<td>DIN 38412 / part 9</td>
<td></td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

Isovaleraldehyde, CAS: 590-86-3

Biodegradation
50 % (28 d), Sewage, aerobic, OECD 301 D.

Abiotic Degradation

<table>
<thead>
<tr>
<th>Isovaleraldehyde (590-86-3)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrolysis</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photolysis</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Isovaleraldehyde (590-86-3)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>log Pow</td>
<td>1.5</td>
<td>OECD 117</td>
<td></td>
</tr>
<tr>
<td>BCF</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Isovaleraldehyde (590-86-3)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
<td>46.1 mN/m (1 g/l @ 20°C (68°F))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adsorption/Desorption</td>
<td>no data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution to environmental</td>
<td>no data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12.5. Results of PBT and vPvB assessment

Isovaleraldehyde, CAS: 590-86-3
PBT and vPvB assessment
Not required

12.6. Other adverse effects

Isovaleraldehyde, CAS: 590-86-3
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 UN 2058
14.2. UN proper shipping name Valeraldehyde
14.3. Transport hazard class(es) 3
14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user
   ADR Tunnel restriction code (D/E)
   Classification Code F1
   Hazard Number 33

ADN

14.1. UN number UN 2058
14.2. UN proper shipping name Valeraldehyde
14.3. Transport hazard class(es) 3
SAFETY DATA SHEET

Iovaleraldehyde
10150

14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user
Classification Code F1
Hazard Number 33

ADN
ADN Tanker forbidden

ICAO-TI / IATA-DGR

14.1. UN number UN 2058
14.2. UN proper shipping name Valeraldehyde
14.3. Transport hazard class(es) 3
14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user no data available

IMDG

14.1. UN number UN 2058
14.2. UN proper shipping name Valeraldehyde
14.3. Transport hazard class(es) 3
14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user EmS F-E, S-D

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
E2

DI 1999/13/EC (VOC Guideline)
SAFETY DATA SHEET

Isovaleraldehyde
10150

International Inventories

 Isovaleraldehyde, CAS: 590-86-3
  AICS (AU)
  DSL (CA)
  IECSC (CN)
  EC-No. 2096915 (EU)
  ENCS (2)-494 (JP)
  ISHL (2)-494 (JP)
  KECI KE-23536 (KR)
  INSQ (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) is not required.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
H411: Toxic to aquatic life with long lasting effects.

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

Disclaimer
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End of Safety Data Sheet