SAFETY DATA SHEET

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

1.1. Product identifier

Identification of the substance/preparation

2-Methylbutanal

CAS-No 96-17-3
EC No. 202-485-6

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

Use of the Substance / Preparation: Intermediate.
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
NCEC +1 202 464 2554 available 24/7

Local emergency telephone number:
+61 2 8014 4558 (Australia)
18000 74234 (Australia toll-free number)
+64 9 929 1483 (New Zealand)
0800 446 881 (New Zealand toll-free number)
+65 3158 1195 (Sri Lanka)
007 803 011 0293 (Indonesia toll-free number)
+60 3 6207 4347 (Malaysia)
001 800 120 666 751 (Thailand toll-free number)
+65 3158 1200 (Bangladesh)
+63 2 8231 2149 (Philippines)
+84 28 4458 2388 (Vietnam)
+65 3165 2217 (Singapore)
available 24/7

SECTION 2: Hazards identification

Europe
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

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.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
- P303 + P361 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P403 + P235: Store in a well ventilated place. Keep cool.
- P501: Dispose of contents/container in accordance with local regulation.

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
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2.1. Classification of the substance or mixture

This substance is classified in accordance with paragraph (d) of §1910.1200 (GHS-US classification).

- Serious eye damage/eye irritation  Category 2A, H319
- Skin sensitization  Category 1, H317
- Target Organ Systemic Toxicant - Single exposure  Category 3, H335
- Flammable liquid  Category 2, H225
- Environmental hazard  Aquatic Acute 2; H401; Aquatic Chronic 2; H411

OSHA Specified Hazards  Not applicable.

2.2. Label elements

Labeling according to §1910.1200 (GHS-US labeling).

Hazard symbol(s)

- Danger symbol

Signal word  Danger

Hazard statements

- H225: Highly flammable liquid and vapor.
- 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

Prevention

- P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233: Keep container tightly closed.
- P241: Use explosion-proof electrical/ ventilating/ lighting equipment.
- P242: Use non-sparking tools.
- P243: Take action to prevent static discharges.
- P261: Avoid breathing gas/mist/vapours.
- P264: Wash hands thoroughly after handling.
- P272: Contaminated work clothing must not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves/eye protection/face protection.

Response

- P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313: If eye irritation persists: Get medical advice/attention.
- P363: Wash contaminated clothing before reuse.
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P391: Collect spillage.

Storage
P403 + P235: Store in a well ventilated place. Keep cool.

Disposal
P501: Dispose of contents/container in accordance with local regulation.

2.3. Other hazards
None known

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-Methylbutyraldehyde</td>
<td>96-17-3</td>
<td>01-2119615422-50</td>
<td>Flam. Liq. 2; H225 Eye Irrit. 2; H319</td>
<td>&gt; 98,0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Sens. 1; H317 STOT SE 3; H335</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 2; H411</td>
<td></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.

**Eyes**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Obtain medical attention.

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

**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, headache, nausea, vomiting.

**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**
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.

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. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Keep in suitable, closed containers for disposal.
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
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 Germany
No exposure limits established.

Exposure limits United States of America
No exposure limits established.

8.2. Exposure controls

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.

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 filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Equipment should conform to NIOSH, EN or other applicable national standards.
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. 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.

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>strong</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>1 ppb</td>
</tr>
<tr>
<td>pH</td>
<td>3.2 (13 g/l in water @ 20 °C (68 °F)) OECD 105</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>&lt; -90 °C (Pour point) @ 1013 hPa</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>92 °C @ 1013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>-5 °C @ 1013 hPa</td>
</tr>
<tr>
<td>Method</td>
<td>EU A.9</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>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
</tbody>
</table>

| Vapour pressure                   |                                              |
| Values [hPa]                      | Values [kPa]                                |
| 76                                | 7,6                                         |
| Values [atm]                      | Values [°C]                                 |
| 0,075                             | 20                                          |
| Method                            | @ °F                                        |
| DIN EN 13016-2                    | 68                                          |

| Vapour density                    | No data available                           |

| Relative density                  |                                              |
| Values [atm]                      | Values [°C]                                 |
| 0,803                             | 20                                          |
| Method                            | @ °F                                        |
| DIN 51757                         | 68                                          |

| Solubility                        |                                              |
| Water solubility                  | 13 g/l @ 20 °C, OECD 105                    |
| Log Pow                           | 1,23 (calculated), KOW WIN                  |
| Autoignition temperature          | 190 °C @ 1017 hPa                           |
| Method                            | DIN 51794                                   |
| Decomposition temperature         | No data available                           |
| Viscosity                         | 0,66 mm²/s @ 20°C                           |
| Method                            | OECD 114, kinematic                         |
| Oxidizing properties              | Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties |
| Explosive properties              | Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties |

9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>86,13</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C5 H10 O</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1,39 @ 20 °C</td>
</tr>
</tbody>
</table>
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

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-Methylbutyraldehyde (96-17-3)</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>LC50</td>
</tr>
</tbody>
</table>

2-Methylbutyraldehyde, CAS: 96-17-3

Assessment

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

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

<table>
<thead>
<tr>
<th>Irritation and corrosion</th>
<th>2-Methylbutyraldehyde (96-17-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organ Effects</td>
<td>Species</td>
</tr>
<tr>
<td>Skin</td>
<td>rabbit</td>
</tr>
</tbody>
</table>

Surface tension: 48.8 mN/m (1 g/l @ 20°C (68°F)), OECD 115
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Version / Revision 3

| Eyes | irritation | rabbit | irritating | read across |

2-Methylbutyraldehyde, CAS: 96-17-3

Assessment

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

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>mouse</td>
<td>sensitizing</td>
<td>OECD 429</td>
</tr>
</tbody>
</table>

2-Methylbutyraldehyde, CAS: 96-17-3

Assessment

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

<table>
<thead>
<tr>
<th>Subacute, subchronic and prolonged toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methylbutyraldehyde (96-17-3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic toxicity</td>
<td>NOAEC: 500 ppm (24 month)</td>
<td>rat mouse</td>
<td>OECD 453 Inhalation</td>
</tr>
</tbody>
</table>

2-Methylbutyraldehyde, CAS: 96-17-3

Assessment

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

<table>
<thead>
<tr>
<th>Carcinogenicity, Mutagenicity, Reproductive toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methylbutyraldehyde (96-17-3)</td>
</tr>
</tbody>
</table>

<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 (without metabolic activation)</td>
<td>OECD 471 (Ames)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>V79 cells, Chinese hamster</td>
<td>positive (with metabolic activation)</td>
<td>OECD 476 (Mammalian Gene Mutation) HPRT</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>rat, hepatocytes</td>
<td>positive</td>
<td>OECD 482 UDS test</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>human hepatocytes</td>
<td>negative</td>
<td>OECD 482 UDS test</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>mouse</td>
<td>negative</td>
<td>OECD 474 Micronucleus</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>No data available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>NOAEC: 2000 ppm</td>
<td>rat mouse</td>
<td>negative</td>
<td>OECD 453 Inhalation</td>
</tr>
</tbody>
</table>

2-Methylbutyraldehyde, CAS: 96-17-3

CMR Classification

The available data on CMR properties do not indicate a classification into categories 1A or 1B

<table>
<thead>
<tr>
<th>Evaluation</th>
</tr>
</thead>
</table>

International (IDF) /EN
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Did not show carcinogenic effects in animal experiments

2-Methylbutyraldehyde, CAS: 96-17-3
Main symptoms
shortness of breath, headache, nausea, vomiting.
Target Organ Systemic Toxicant - Single exposure
STOT SE
respiratory system
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
Due to the viscosity, this product does not present an aspiration hazard
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
2-Methylbutyraldehyde (96-17-3)

<table>
<thead>
<tr>
<th>Species</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: 7.2 mg/l</td>
<td>OECD 202</td>
</tr>
<tr>
<td>Pseudokirchneriella subcapitata</td>
<td>72h</td>
<td>EC50: 123 mg/l (Growth rate)</td>
<td>OECD 201</td>
</tr>
</tbody>
</table>

Long term toxicity
2-Methylbutyraldehyde (96-17-3)

<table>
<thead>
<tr>
<th>Type</th>
<th>Species</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic toxicity</td>
<td>Pseudokirchneriella subcapitata</td>
<td>NOEC: 1,43 mg/l (3d) Growth inhibition</td>
<td>OECD 201</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

2-Methylbutyraldehyde, CAS: 96-17-3
Biodegradation
54.2 % (28 d), Sewage, aerobic, OECD 301 D.

Abiotic Degradation
2-Methylbutyraldehyde (96-17-3)

<table>
<thead>
<tr>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrolysis</td>
<td>not expected</td>
<td></td>
</tr>
<tr>
<td>Photolysis</td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential
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<table>
<thead>
<tr>
<th>2-Methylbutyraldehyde (96-17-3)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>log Pow</td>
<td>1.23</td>
<td>calculated, KOW WIN</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>2-Methylbutyraldehyde (96-17-3)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
<td>68.5 mN/m (68.52 g/l @ 20°C (68°F))</td>
<td>OECD 115</td>
<td></td>
</tr>
<tr>
<td>Distribution to environmental compartments</td>
<td>no data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adsorption/Desorption</td>
<td>no data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

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

ICAO-TI / IATA-DGR

14.1. UN number
UN 3371

14.2. UN proper shipping name
2-Methylbutanal

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
SAFETY DATA SHEET

2-Methylbutanal
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IMDG

14.1. UN number  UN 3371
14.2. UN proper shipping name  2-Methylbutanal
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
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code
Product name  Valeraldehyde
Ship type  3
Pollution category  Y

ADR/RID

14.1. UN number  UN 3371
14.2. UN proper shipping name  2-Methylbutanal
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

SECTION 15: Regulatory information

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

DI 2012/18/EU (Seveso III)
Category  Annex I, part 1:
P5a - c; depending on conditions
E2

DI 1999/13/EC (VOC Guideline)

<table>
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<tr>
<th>Component</th>
<th>Status</th>
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<tbody>
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<td>2-Methylbutyraldehyde, CAS: 96-17-3</td>
<td>regulated</td>
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</tbody>
</table>

International Inventories

2-Methylbutyraldehyde, CAS: 96-17-3
AICS (AU)
SAFETY DATA SHEET

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10790

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.

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