1. Identification of the substance / mixture and of the company / undertaking

Identification of the substance/preparation Isopentanoic acid
EINECS-No -
Use of the Substance / Preparation Intermediate.
Company/Undertaking OXEA GmbH
Identification Otto-Roelen-Str. 3
D-46147 Oberhausen
Germany
Product Information
Product Stewardship
FAX: +49 (0)208 693 2053
email: psq@oxea-chemicals.com
Emergency telephone number
+44 (0) 1235 239 670 (UK)
in USA, call 800 424 9300
outside USA, call 703 527 3887, collect calls accepted

2. Hazards identification

Europe

GHS / CLP
This mixture is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation, GHS)
- Acute oral toxicity Category 4, H302
- Acute dermal toxicity Category 4, H312
- Skin corrosion/irritation Category 1B, H314
- Serious eye damage/eye irritation Category 1, H318
- Environmental hazard Aquatic Chronic 3; H412

Classification and labelling according to Directive 67/548/EEC or 1999/45/EC
- Xn, Harmful, R21/22
- C, Corrosive, R34
- R52/53

Vapour/air-mixtures are explosive at intense warming
Components of the product may be absorbed into the body by inhalation and ingestion

Hazard pictograms
SAFETY DATA SHEET

Isopentanoic acid
11560

Signal word

Danger

Hazard statements

H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H412: Harmful to aquatic life with long lasting effects.

Precautionary statements

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P310: Immediately call a POISON CENTER/doctor.

contains

n-Valeric acid (CAS 109-52-4), 2-Methylbutyric acid (CAS 116-53-0)

Components of the product may be absorbed into the body by inhalation and ingestion
Vapour/air-mixtures are explosive at intense warming

USA

Emergency Overview

Statements of hazard

Danger

Combustible liquid and vapour
Vapour/air-mixtures are explosive at intense warming
Causes severe skin burns and eye damage
Causes digestive tract burns
Causes severe respiratory tract irritation
May be harmful in contact with skin
Harmful to aquatic organisms

OSHA Regulatory Status

This material is hazardous as defined by the American OSHA Hazard Communication Standard (29CFR 1910.1200).

Potential Health Effects

Principle Routes of Exposure

Inhalation, Eye contact, Skin contact, Ingestion.

Inhalation

Causes severe respiratory tract irritation. Components of the product may be absorbed into the body by inhalation.

Eye contact

Causes severe eye damage.

Skin contact

Causes severe skin burns. May be harmful in contact with skin.
Isopentanoic acid
11560

Ingestion
Causes digestive tract burns. Components of the product may be absorbed into the body by ingestion.

Main symptoms
central nervous system depression, unconsciousness, shortness of breath, vomiting, cough, dizziness, nausea, gastrointestinal discomfort.

Target Organ Effects
Lung oedema
Lung irritation
Dermatitis

Environmental properties
Harmful to aquatic life

3. Composition / Information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>REACH-No</th>
<th>1272/2008/EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valeric acid</td>
<td>109-52-4</td>
<td>01-2119448010-56-0001</td>
<td>Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Chronic 3; H412</td>
</tr>
<tr>
<td>2-Methylbutyric acid</td>
<td>116-53-0</td>
<td>01-2119959862-23-0000</td>
<td>Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318</td>
</tr>
<tr>
<td>Isovaleric acid</td>
<td>503-74-2</td>
<td>01-2119959864-19-0000</td>
<td>Skin Corr. 1B; H314 Eye Dam. 1; H318</td>
</tr>
</tbody>
</table>

4. First aid measures

General advice
Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

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. Immediate medical attention is required.

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

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

Main symptoms
central nervous system depression, unconsciousness, shortness of breath, vomiting, cough, dizziness, nausea, gastrointestinal discomfort.
5. Firefighting measures

OSHA Flammability classification
Combustible liquid Class III A

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

Extinguishing media which must not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
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
Vapour/air-mixtures are explosive at intense warming

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
Cool containers / tanks with water spray. Keep people away from and upwind of fire. Dike and collect water used to fight fire. Water run-off and vapor cloud may be corrosive. Water run-off can cause environmental damage.

6. Accidental release measures

Personal precautions
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.

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.

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).

SECTION 7: Handling and storage
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.

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/air-mixtures are explosive at intense warming.

Storage
Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.

Suitable material: stainless steel  
Unsuitable material: copper, nickel

Incompatible products
bases  
amines  
strong oxidizing agents

8. Exposure controls / Personal protection

Exposure limits United States of America
No exposure limits established

Exposure limits European Union
No exposure limits established.

Exposure limits Germany
No exposure limits established.

Occupational Exposure Controls

Engineering measures
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.
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.

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.

Suitable material
- nitrile rubber
- polyvinylchloride

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.

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

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.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>unpleasant</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>102.13</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>C5 H10 O2</td>
</tr>
<tr>
<td>Flash point</td>
<td>77 - 84 °C</td>
</tr>
<tr>
<td>Method</td>
<td>ASTM D-7094</td>
</tr>
<tr>
<td>Autoignition</td>
<td>410 - 435 °C</td>
</tr>
<tr>
<td>temperature</td>
<td>Method</td>
</tr>
<tr>
<td>Lower explosion</td>
<td>1,6 Vol %</td>
</tr>
<tr>
<td>limit</td>
<td>Method</td>
</tr>
<tr>
<td>Upper explosion</td>
<td>7,3 Vol %</td>
</tr>
<tr>
<td>limit</td>
<td>Melting point</td>
</tr>
<tr>
<td>Boiling point</td>
<td>177 - 186 °C</td>
</tr>
<tr>
<td>range</td>
<td>@ 1013 hPa</td>
</tr>
</tbody>
</table>

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>~ 2</td>
<td>~ 0,2</td>
<td>~ 0,002</td>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>~ 9</td>
<td>~ 0,9</td>
<td>~ 0,009</td>
<td>50</td>
<td>122</td>
</tr>
</tbody>
</table>

Density

<table>
<thead>
<tr>
<th>Values [g/cm³]</th>
<th>@ °C</th>
<th>@ °F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,94</td>
<td>20</td>
<td>68</td>
<td>DIN 51757</td>
</tr>
</tbody>
</table>

Refractive index

1,405 - 1,408 @ 20 °C

Viscosity

2,1 - 2,2 mPa*s @ 20 °C

Method

DIN 51562, dynamic
SAFETY DATA SHEET

Isopentanoic acid
11560

Version / Revision 1.00

pH 2.7 (37.5 g/l in water @ 20 °C (68 °F))
Water solubility 37 - 45 g/l @ 20 °C, OECD 105
log Pow 1.8 (calculated)
Vapour density ~ 3.5 (Air = 1) @ 20 °C (68 °F)
Surface tension 51 - 64 mN/m (1 g/l @ 20°C)

The absence of data elements required by Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

10. Stability and reactivity

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

Stability
Stable under recommended storage conditions.

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

Materials to avoid
bases, amines, strong oxidizing agents.

Hazardous decomposition products
No decomposition if stored and applied as directed.

11. Toxicological information

Principle Routes of Exposure Inhalation, Eye contact, Skin contact, Ingestion

<table>
<thead>
<tr>
<th>Acute toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valeric acid (109-52-4)</td>
</tr>
<tr>
<td>Routes of Exposure</td>
</tr>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>2-Methylbutyric acid (116-53-0)</td>
</tr>
<tr>
<td>Routes of Exposure</td>
</tr>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
<tr>
<td>Isovaleric acid (503-74-2)</td>
</tr>
<tr>
<td>Routes of Exposure</td>
</tr>
<tr>
<td>Oral</td>
</tr>
<tr>
<td>Dermal</td>
</tr>
<tr>
<td>Inhalative</td>
</tr>
</tbody>
</table>

Irritation and corrosion

Valeric acid (109-52-4)

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>corrosive</td>
<td>3 min</td>
</tr>
<tr>
<td>Eyes</td>
<td>rabbit</td>
<td>corrosive</td>
<td></td>
</tr>
</tbody>
</table>
### 2-Methylbutyric acid (116-53-0)

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>corrosive</td>
<td>OECD 404, 3 min</td>
</tr>
</tbody>
</table>

### Isovaleric acid (503-74-2)

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>corrosive</td>
<td>OECD 404, 1h</td>
</tr>
</tbody>
</table>

#### Sensitization

**Isovaleric acid (503-74-2)**

<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>Human experience</td>
<td>not sensitizing</td>
<td>OECD 406, 1 %, in Petrolatum</td>
</tr>
</tbody>
</table>

### Subacute, subchronic and prolonged toxicity

#### 2-Methylbutyric acid (116-53-0)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subchronic toxicity</td>
<td>NOAEL: 5000 mg/kg/d (90d)</td>
<td>rat, male</td>
<td>Oral read across</td>
</tr>
</tbody>
</table>

#### Isovaleric acid (503-74-2)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subchronic toxicity</td>
<td>NOAEL: 5000 mg/kg/d (90d)</td>
<td>rat, male</td>
<td>Oral read across</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
<td>NOAEL: 1068 mg/kg/d (90d)</td>
<td>rat, male</td>
<td>OECD 408, Oral read across</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
<td>NOAEL: 1431 mg/kg/d (90d)</td>
<td>rat, female</td>
<td>OECD 408, Oral read across</td>
</tr>
</tbody>
</table>

### Carcinogenicity, Mutagenicity, Reproductive toxicity

#### Valeric acid (109-52-4)

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL: 750 mg/kg/d (20 d)</td>
<td>rat</td>
<td>OECD 414, Oral</td>
<td>Fetal toxicity, Embryotoxicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL: 750 mg/kg/d (20 d)</td>
<td>rat</td>
<td>OECD 414, Oral</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>LOAEL: 750 mg/kg/d (20 d)</td>
<td>rat</td>
<td>OECD 414, Oral</td>
<td>Maternal toxicity</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>25 mg/kg (2 weeks), 20 mg/kg (78 weeks, 2x / week)</td>
<td>mouse</td>
<td>positive</td>
<td>Skin</td>
</tr>
</tbody>
</table>

**Mutagenicity**

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonella typhimurium</td>
<td>negative</td>
<td>OECD 471 (Ames)</td>
<td>In vitro study</td>
<td></td>
</tr>
<tr>
<td>CHO (Chinese Hamster Ovary) cells</td>
<td>positive</td>
<td>OECD 473 (Chromosomal Aberration)</td>
<td>In vitro study</td>
<td></td>
</tr>
<tr>
<td>CHO (Chinese Hamster Ovary) cells</td>
<td>positive</td>
<td>OECD 479 (SCE)</td>
<td>In vitro study</td>
<td></td>
</tr>
<tr>
<td>CHO (Chinese Hamster Ovary) cells</td>
<td>negative</td>
<td>OECD 476 (Mammalian Gene Mutation)</td>
<td>In vitro study</td>
<td></td>
</tr>
</tbody>
</table>
Valeric acid, CAS: 109-52-4
Main symptoms
central nervous system depression, unconsciousness, shortness of breath, vomiting.
Other adverse effects
Components of the product may be absorbed into the body by inhalation and ingestion.

2-Methylbutyric acid, CAS: 116-53-0
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
Main symptoms
cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.
Target Organ Systemic Toxicant - Single exposure
no data available.
Target Organ Systemic Toxicant - Repeated exposure
no data available.
Aspiration toxicity
no data available
Isovaleric acid, CAS: 503-74-2
Main symptoms
cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.
Note
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. Handle in accordance with good industrial hygiene and safety practice.

12. Ecological information

Acute aquatic toxicity
Valeric acid (109-52-4)

<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>LC50: 88,1 mg/l</td>
<td>OECD 202</td>
</tr>
<tr>
<td>Pseudokirchneriella subcapitata</td>
<td>72h</td>
<td>EC50: 29,3 mg/l</td>
<td>OECD 201</td>
</tr>
<tr>
<td>Pimephales promelas (fathead minnow)</td>
<td>96h</td>
<td>LC50: 39 mg/l</td>
<td>OECD 203</td>
</tr>
</tbody>
</table>
2-Methylbutyric acid (116-53-0)

<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danio rerio (Zebra fish)</td>
<td>96h</td>
<td>LC50: &gt;1000 mg/l</td>
<td>OECD 203</td>
</tr>
<tr>
<td>Bacteria / Sewage</td>
<td>24h</td>
<td>TTC: 1250 mg/l</td>
<td>ETAD Fermentation tube method</td>
</tr>
</tbody>
</table>

Isovaleric acid (503-74-2)

<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pimephales promelas (fathead minnow)</td>
<td>96h</td>
<td>LC50: 77 mg/l</td>
<td>OECD 203 read across</td>
</tr>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: 51,25 mg/l</td>
<td>DIN 38412, part 11 read across</td>
</tr>
<tr>
<td>Pseudokirchneriella subcapitata</td>
<td>72h</td>
<td>EC50: 29,3 mg/l</td>
<td>OECD 201 read across</td>
</tr>
<tr>
<td>Tetrahymena pyriformis</td>
<td>40h</td>
<td>IC50: 224 mg/l (Growth inhibition)</td>
<td></td>
</tr>
</tbody>
</table>

Valeric acid, CAS: 109-52-4

Biodegradation
72 % (10 d), activated sludge, non-adapted, aerobic.

2-Methylbutyric acid, CAS: 116-53-0

Biodegradation
67.9 % (10 d), Sewage, domestic, non-adapted, Readily biodegradable, OECD 301 D.

Isovaleric acid, CAS: 503-74-2

Biodegradation
58 - 66 % (8 d), activated sludge, aerobic, non-adapted, OECD 301 C.

2-Methylbutyric acid, CAS: 116-53-0

12.4. Mobility in soil
No data available

Isovaleric acid, CAS: 503-74-2

Bioaccumulative potential
BCF: 3,162
(calculated)

2-Methylbutyric acid, CAS: 116-53-0

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

Additional ecological information
No data available

Log Pow 1.8 (calculated)

Note
Avoid release to the environment.

13. Disposal considerations

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)
14. Transport information

**IMDG**
- **UN/ID No:** UN 3265
- **Proper shipping name:** Corrosive liquid, acidic, organic, n.o.s.
- **Hazard Inducer:** (2-Methylbutyric acid / n-Valeric acid)
- **Class:** 8
- **Packing group:** II
- **EmS:** F-A, S-B

**ICAO/IATA**
- **UN/ID No:** UN 3265
- **Proper shipping name:** Corrosive liquid, acidic, organic, n.o.s.
- **Hazard Inducer:** (2-Methylbutyric acid / n-Valeric acid)
- **Class:** 8
- **Packing group:** II

**ADR/RID**
- **UN/ID No:** UN 3265
- **Proper shipping name:** Corrosive liquid, acidic, organic, n.o.s.
- **Hazard Inducer:** (2-Methylbutyric acid / n-Valeric acid)
- **Class:** 8
- **Packing group:** II
- **ADR Tunnel restriction code:** (E)
- **Classification Code:** C3
- **Hazard Number:** 80

**D.O.T. (49CFR)**
- **UN/ID No:** UN 3265
- **Proper shipping name:** Corrosive liquid, acidic, organic, n.o.s.
- **Hazard Inducer:** (2-Methylbutyric acid / n-Valeric acid)
- **Class:** 8
- **Packing group:** II
- **Emergency Response Guide:** 153

15. Regulatory information

**OSHA Regulatory Status**
This material is hazardous as defined by the American OSHA Hazard Communication Standard (29CFR 1910.1200)

**Basis for Classification**
This mixture is classified based on GHS (United Nations version 2013). (See chapter 2)

**Regulation 1272/2008, Annex VI**

- **Valeric acid, CAS: 109-52-4**
  - **Classification**
    - Skin Corr. 1B; H314
    - Aquatic Chronic 3; H412
  - **Hazard pictograms**
    - Corrosion
  - **Signal word**
    - Danger
Hazard statements

H314, H412

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>Valeric acid</td>
<td>regulated</td>
</tr>
<tr>
<td>CAS: 109-52-4</td>
<td></td>
</tr>
<tr>
<td>2-Methylbutyric acid</td>
<td>regulated</td>
</tr>
<tr>
<td>CAS: 116-53-0</td>
<td></td>
</tr>
<tr>
<td>Isovaleric acid</td>
<td>regulated</td>
</tr>
<tr>
<td>CAS: 503-74-2</td>
<td></td>
</tr>
</tbody>
</table>

International Inventories

Valeric acid, CAS: 109-52-4
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2036772 (EU)
ENCS (2)-608 (JP)
ISHL (2)-608 (JP)
KECI KE-35263 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)

2-Methylbutyric acid, CAS: 116-53-0
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2041452 (EU)
ENCS (2)-608 (JP)
ISHL (2)-608 (JP)
KECI KE-23544 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)

Isovaleric acid, CAS: 503-74-2
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2079753 (EU)
ENCS (2)-608 (JP)
ISHL (2)-608 (JP)
KECI KE-23545 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)

16. Other information
SAFETY DATA SHEET

Isopentanoic acid
11560

Version / Revision 1 .00

Full text of H-statements referred to under sections 2 and 3
H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

Full text of R-phrases referred to under sections 2 and 3
R21/22 - Harmful in contact with skin and if swallowed
R34 - Causes burns
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Revision Date 17-Apr-2015
Issuing date 17-Apr-2015

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 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).
The annex is not required because the substance is registered as an intermediate under REACh.

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