SECTION 1: Identification

1.1. Product identifier

Identification of the substance/preparation

3-Methylbutyric acid

CAS-No

503-74-2

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

Supplier

OXEA Corporation

15375 Memorial Drive

West Memorial Place I

Suite 300

Houston, TX 77079

USA

Phone +1 346 378 7300

Product Information

Product Stewardship

FAX: +49 (0)208 693 2053

email: psq@oxea-chemicals.com

1.4. Emergency telephone number

Emergency telephone number

in USA, call 800 424 9300

outside USA, call +1.703.527.3887, collect calls accepted

available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

- Skin corrosion/irritation Category 1B, H314
- Serious eye damage/eye irritation Category 1, H318
- Flammable liquid Category 4, H227
- Environmental hazard Aquatic Acute 3; H402
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OSHA Specified Hazards
Not applicable.

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

Hazard symbol(s)

Signal word
Danger

Hazard statements
H227: Combustible liquid
H314: Causes severe skin burns and eye damage.
H402: Harmful to aquatic life

Precautionary statements
Prevention
P210: Keep away from flames and hot surfaces. - No smoking.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P260: Do not breathe gas/mist/vapours.
P264: Wash hands thoroughly after handling.
P273: Avoid release to the environment.

Response
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P321: Specific treatment: IF ON SKIN: Wash off immediately with plenty of water for at least 15 minutes.
P361: Take off immediately all contaminated clothing and wash it 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.
P310: Immediately call a POISON CENTER/doctor.

Storage
P403 + P235: Store in a well ventilated place. Keep cool.
P405: Store locked up.

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

2.3. Other hazards
Vapour/air-mixtures are explosive at intense warming
SECTION 3: Composition / information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isovaleric acid</td>
<td>503-74-2</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. Immediate medical attention is required.

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

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

Main symptoms
cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.

Special hazard
Lung irritation, Lung oedema, 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. If ingested, flush stomach and compensate acidosis. In case of lung irritation, first treatment with cortisone spray.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
foam, dry chemical, carbon dioxide (CO2), water spray
Unsuitable Extinguishing Media
Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture
Under conditions giving incomplete combustion, hazardous gases produced may consist of:
- carbon monoxide (CO)
- carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors
Vapour/air-mixtures are explosive at intense warming

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. Water run-off and vapor cloud may be corrosive. 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. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections
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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.

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

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

Incompatible products
bases
amines
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/air-mixtures are explosive at intense warming.

Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Keep at temperatures between 0 °C and 38 °C (32 °F and 100 °F).

Suitable material
stainless steel, aluminium

Unsuitable material
nickel, copper

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits United States of America

No exposure limits established regarding ACGIH, OSHA Z-1 and OSHA Z-2.

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.

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

Suitable material polyvinylchloride
Evaluation Information derived from practical experience
Glove thickness approx 0,8 mm

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.

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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
3-Methylbutyric acid
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Appearance: liquid
Colour: colourless
Odour: unpleasant
Odour threshold: 0.02 mg/m³
pH: 3.1 (1 % in water @ 25 °C (77 °F))
Melting point/range: -24 °F (-31 °C) (Pour point)
Boiling point/range: 353 °F (178.5 °C) @ 1 atm (101.3 kPa)
Flash point: 176 °F (80 °C)
Method: EN 22719
Evaporation rate: No data available
Flammability (solid, gas): Does not apply, the substance is a liquid
Lower explosion limit: 1.4 Vol %
Upper explosion limit: 7.3 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>1</td>
<td>0.1</td>
<td>0.001</td>
<td>20</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>6.6</td>
<td>0.66</td>
<td>0.007</td>
<td>50</td>
<td>122</td>
<td></td>
</tr>
</tbody>
</table>

Vapour density: 3.5 (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>0.9258</td>
<td>20</td>
<td>68</td>
<td>DIN 51757</td>
</tr>
</tbody>
</table>

Solubility: No data available
Water solubility: 48 g/l @ 68 °F (20 °C) OECD 105
log Pow: No data available
Autoignition temperature: 788 °F (420 °C)
Method: DIN 51794
Decomposition temperature: No data available
Viscosity: 2.4 mPa*s @ 68 °F (20 °C)
Method: DIN 51562, dynamic

9.2. Other information

Molecular weight: 102.13
Molecular formula: C5 H10 O2
Oxidizing properties: Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Refractive Index: 1.403 @ 68 °F (20 °C)
Explosive properties: Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.
10.2. Chemical stability
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions
Hazardous polymerisation does not occur.

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

10.5. Incompatible materials
bases, amines, 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 Eye contact, Skin contact, Inhalation, Ingestion

 Isovaleric acid, CAS: 503-74-2
Main symptoms
cough, dizziness, nausea, shortness of breath, unconsciousness, gastrointestinal discomfort.

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

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

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Isovaleric acid (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of Exposure</td>
<td>Endpoint</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC0</td>
</tr>
</tbody>
</table>

 Isovaleric acid, CAS: 503-74-2
Assessment
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity
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Acute inhalation toxicity

Irritation and corrosion

<table>
<thead>
<tr>
<th>Isovaleric acid (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organ Effects</td>
</tr>
<tr>
<td>Skin</td>
</tr>
</tbody>
</table>

ISOVALERIC ACID, CAS: 503-74-2

Assessment

The available data lead to the classification given in section 2.

Sensitization

<table>
<thead>
<tr>
<th>ISOVALERIC ACID (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organ Effects</td>
</tr>
<tr>
<td>Skin</td>
</tr>
</tbody>
</table>

ISOVALERIC ACID, CAS: 503-74-2

Assessment

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

Subacute, subchronic and prolonged toxicity

<table>
<thead>
<tr>
<th>ISOVALERIC ACID (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
</tr>
<tr>
<td>Subchronic toxicity</td>
</tr>
</tbody>
</table>

ISOVALERIC ACID, CAS: 503-74-2

Assessment

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

Carcinogenicity, Mutagenicity, Reproductive toxicity

<table>
<thead>
<tr>
<th>ISOVALERIC ACID (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
</tbody>
</table>

Emergency telephone number

in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted USA (A-US)
ISOVALERIC ACID, CAS: 503-74-2

**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
Did not show reprotoxic effects in animal experiments

ISOVALERIC ACID, CAS: 503-74-2

**Aspiration toxicity**
Due to the viscosity, this product does not present an aspiration hazard

**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>ISOVALERIC ACID (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Pimephales promelas (fathead minnow)</td>
</tr>
<tr>
<td>Daphnia magna (Water flea)</td>
</tr>
<tr>
<td>Pseudokirchneriella subcapitata</td>
</tr>
<tr>
<td>Tetrahymena pyriformis</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

ISOVALERIC ACID, CAS: 503-74-2

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

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>ISOVALERIC ACID (503-74-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>log Pow</td>
</tr>
<tr>
<td>BCF</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil

Emergency telephone number
in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
USA (A-US)
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ISOVALERIC ACID (503-74-2)

<table>
<thead>
<tr>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
<td>63.3 mN/m (1 g/l @ 20°C (68°F))</td>
<td>OECD 115</td>
</tr>
</tbody>
</table>

12.5. Results of PBT and vPvB assessment

**Isovaleric acid, CAS: 503-74-2**

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

12.6. Other adverse effects

**Isovaleric acid, CAS: 503-74-2**
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.

**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

**D.O.T. (49CFR)**

14.1. UN number
14.2. UN proper shipping name
Corrosive liquid, acidic, organic, n.o.s. (3-Methylbutyric acid)
14.3. Transport hazard class(es)
8
14.4. Packing group
II
14.5. Environmental hazards
no
14.6. Special precautions for user

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ICAO-TI / IATA-DGR

14.1. UN number
UN 3265

14.2. UN proper shipping name
Corrosive liquid, acidic, organic, n.o.s. (3-Methylbutyric acid)

14.3. Transport hazard class(es)
8

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 3265

14.2. UN proper shipping name
Corrosive liquid, acidic, organic, n.o.s. (3-Methylbutyric acid)

14.3. Transport hazard class(es)
8

14.4. Packing group
II

14.5. Environmental hazards
no

14.6. Special precautions for user
EmS

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code
not applicable

SECTION 15: Regulatory information

Federal and State Regulations
Components of the product are listed in the quoted regulations. For details please refer to the regulations directly. This list is not exhaustive, please check for other applicable regulations.

Federal Regulations
This product is listed on the TSCA inventory

 Isovaleric acid, CAS: 503-74-2
   MA RTK List***
   NJ RTK List
   NY RTK List***

International Inventories

 Isovaleric acid, CAS: 503-74-2
   AICS (AU)***

Emergency telephone number
in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
USA (A-US)
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SECTION 16: Other information

Revision Date 10-Dec-2019
Issuing date 10-Dec-2019

Hazard Rating Systems

NFPA (National Fire Protection Association)
- Health Hazard 3
- Fire Hazard 2
- Reactivity 0

HMIS (Hazardous Material Information System)
- Health Hazard 3
- Flammability 2
- Physical Hazard 0

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

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

Further information for the safety data sheet
Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage (www.oxea-chemicals.com).
The use of a comma in section 3 and section 7 to 12 is the same as a period.

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End of Safety Data Sheet