SECTION 1: Identification

1.1. Product identifier

Identification of the substance/preparation

Propionic acid

CAS-No

79-09-4

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
- Target Organ Systemic Toxicant - Single exposure Category 3, H335
- Flammable liquid Category 3, H226
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

H226: Flammable liquid and vapor.
H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.

Precautionary statements

Prevention

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261: Avoid breathing gas/mist/vapours.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.

Storage

P403 + P233: Store in a well ventilated place. Keep container tightly closed.

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>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propionic acid</td>
<td>79-09-4</td>
<td>&gt; 99,5</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, shortness of breath, abdominal pain, nausea, vomiting, circulatory collapse.

Special hazard
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.

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
SAFETY DATA SHEET

Propionic acid
10970

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 split 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

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.

Emergency telephone number

in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted

USA (A-US)
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
strong 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 -12 °C and 38 °C (10 and 100 °F).

Unsuitable material
None known

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits United States of America

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA (mg/m³)</th>
<th>TWA (ppm)</th>
<th>STEL (mg/m³)</th>
<th>STEL (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propionic acid</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS: 79-09-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note
For details and further information please refer to the original regulation.

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>butyl-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 0.3 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>&gt; 480 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suitable material</th>
<th>polyvinylchloride / nitrile rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>according to EN 374: level 4</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0.9 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>approx 120 min</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.

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>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>Odour threshold</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Propionic acid
10970

Version / Revision 2.01

pH No data available
Melting point/range -6.7 °F (-21.5 °C)
Boiling point/range 286 °F (141 °C) @ 1 atm (101,3 kPa)
Flash point 123 °F (50.5 °C)
Method DIN 51755
Evaporation rate No data available
Flammability (solid, gas) Does not apply, the substance is a liquid
Lower explosion limit 2.1 Vol %
Upper explosion limit 12 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>4.0</td>
<td>0.40</td>
<td>0.004</td>
<td>23</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>2.2</td>
<td>0.022</td>
<td>50</td>
<td>122</td>
<td></td>
</tr>
</tbody>
</table>

Vapour density 2.6 (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>0.99</td>
<td>20</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

Solubility completely miscible, in water
log Pow 0.33 (measured)
Autoignition temperature 824 °F (440 °C)
Method DIN 51794
Decomposition temperature No data available
Viscosity 1,175 mPa*s @ 59 °F (15 °C)

9.2. Other information

Molecular weight 74.08
Molecular formula C3 H6 O2
Oxidizing properties Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Refractive Index 1.387 @ 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
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, strong 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
Ingestion, Inhalation, Eye contact, Skin contact

Propionic acid, CAS: 79-09-4
Main symptoms
cough, shortness of breath, abdominal pain, nausea, vomiting, circulatory collapse.

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

Acute toxicity

<table>
<thead>
<tr>
<th>Routes of Exposure</th>
<th>Endpoint</th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>3455 mg/kg</td>
<td>rat, male/female</td>
<td>OECD 401</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50</td>
<td>&gt; 19,7 mg/l (1 h)</td>
<td>rat, male/female</td>
<td>OECD 403 (vapour)</td>
</tr>
</tbody>
</table>

Propionic acid, CAS: 79-09-4
Assessment
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute inhalation toxicity
STOT SE
Dermal acute toxicity data were not determined, because of the corrosive properties of the substance

Irritation and corrosion

<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></td>
</tr>
<tr>
<td>Eyes</td>
<td>rabbit</td>
<td>corrosive</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Propionic acid, CAS: 79-09-4

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

Sensitization

<table>
<thead>
<tr>
<th>Propionic acid (79-09-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organ Effects</td>
</tr>
<tr>
<td>Skin</td>
</tr>
</tbody>
</table>

Propionic acid, CAS: 79-09-4

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>Propionic acid (79-09-4)</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>

Carcinogenicity, Mutagenicity, Reproductive toxicity

<table>
<thead>
<tr>
<th>Propionic acid (79-09-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Mutagenicity</td>
</tr>
<tr>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
</tr>
</tbody>
</table>

Propionic acid, CAS: 79-09-4

CMR Classification
The available data on CMR properties are summarized in the table above. They do not indicate a classification into

Emergency telephone number in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted USA (A-US)
SAFETY DATA SHEET

Propionic acid
10970

categories 1A or 1B

Evaluation
In vitro tests did not show mutagenic effects

Propionic acid, CAS: 79-09-4
Aspiration toxicity
no data available

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>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leuciscus idus (Golden orfe)</td>
<td>96h</td>
<td>LC50: &gt; 10000 mg/l</td>
<td>DIN 38412, part 15</td>
</tr>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: &gt; 500 mg/l</td>
<td>84/449/EEC C.2</td>
</tr>
<tr>
<td>Desmodesmus subspicatus</td>
<td>72h</td>
<td>EC50: &gt; 500 mg/l</td>
<td>OECD 201</td>
</tr>
<tr>
<td>Activated sludge (domestic)</td>
<td>30 min</td>
<td>EC20: 1040 mg/l</td>
<td>ISO 8192 Respiration rate</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

Propionic acid, CAS: 79-09-4
Biodegradation
95 % (10 d), aerobic, activated sludge, industrial, OECD 302 B (Zahn-Wellens Test).

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Propionic acid (79-09-4)</th>
<th>Type</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>log Pow</td>
<td>0.33</td>
<td>measured</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

Propionic acid (79-09-4)

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

12.5. Results of PBT and vPvB assessment

Emergency telephone number
in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
10 / 14

USA (A-US)
SAFETY DATA SHEET

Propionic acid
10970

Version / Revision 2.01

Propionic acid, CAS: 79-09-4
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

Propionic acid, CAS: 79-09-4
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  UN 3463
14.2. UN proper shipping name Propionic acid
14.3. Transport hazard class(es) 8
14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user Reportable Quantity (RQ) 5000 lb/ 2270 kg (Propionic acid)
                 Emergency Response Guide 132

ICAO-TI / IATA-DGR

14.1. UN number UN 3463
14.2. UN proper shipping name Propionic acid

Emergency telephone number in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
11 / 14
USA (A-US)
SAFETY DATA SHEET

Propionic acid
10970

14.3. Transport hazard class(es)  8
   Subsidiary Risk  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 3463
14.2. UN proper shipping name  Propionic acid
14.3. Transport hazard class(es)  8
   Subsidiary Risk  3
14.4. Packing group  II
14.5. Environmental hazards  no
14.6. Special precautions for user  EmS  F-E, S-C
14.7. Transport in bulk according to Annex II
   of MARPOL and the IBC Code
   Product name  Propionic acid
   Ship type  3
   Pollution category  Y

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

Propionic acid, CAS: 79-09-4
40CFR 63.100-.106, Table 1: Group I
CERCLA Hazardous Substance
   CERCLA RQ  5000 LBS

State Regulations

Propionic acid, CAS: 79-09-4
   CA Hazardous Substances (Director’s) List
   IL Chemical Safety Act
   MA RTK List
   MN Hazardous Substances List
SAFETY DATA SHEET

Propionic acid
10970

NJ RTK List
NY Hazardous Substances List
NY RTK List
PA RTK List
RI RTK List

International Inventories

Propionic acid, CAS: 79-09-4
AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2011763 (EU)
ENCS (2)-602 (JP)
ISHL (2)-602 (JP)
KECI KE-29352 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)
TCSI (TW)

SECTION 16: Other information

Revision Date 12-Dec-2019
Issuing date 12-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).

Emergency telephone number in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
USA (A-US)
The use of a comma in section 3 and section 7 to 12 is the same as a period.

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