SECTION 1. Identification

Product identifier

<table>
<thead>
<tr>
<th>Product number</th>
<th>818242</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>Oxalic acid dihydrate for synthesis</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>6153-56-6</td>
</tr>
</tbody>
</table>

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

Identified uses

Chemical for synthesis

Details of the supplier of the safety data sheet

Company

EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

Emergency telephone

800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Acute toxicity, Category 4, Oral, H302
Acute toxicity, Category 4, Dermal, H312
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms

Signal Word

Danger

Hazard Statements

H302 + H312 Harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.

Precautionary Statements
SAFETY DATA SHEET
generated according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Product number</th>
<th>818242</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>Oxalic acid dihydrate for synthesis</td>
</tr>
<tr>
<td>Version</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Product name: Oxalic acid dihydrate for synthesis

- **P264** Wash skin thoroughly after handling.
- **P270** Do not eat, drink or smoke when using this product.
- **P280** Wear protective gloves/ eye protection/ face protection.
- **P301 + P312** IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
- **P302 + P352** IF ON SKIN: Wash with plenty of soap and water.
- **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 or doctor/ physician.
- **P322** Specific measures (see supplemental first aid instructions on this label).
- **P330** Rinse mouth.
- **P363** Wash contaminated clothing before reuse.
- **P501** Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**
None known.

**SECTION 3. Composition/information on ingredients**

<table>
<thead>
<tr>
<th>Formula</th>
<th>(COOH)₂ * 2 H₂O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molar mass</td>
<td>126.07 g/mol</td>
</tr>
</tbody>
</table>

**Hazardous ingredients**

*Chemical Name (Concentration)*

CAS-No.

**Oxalic acid dihydrate (>= 90 % - <= 100 %)**
6153-56-6

Exact percentages are being withheld as a trade secret.

**SECTION 4. First aid measures**

**Description of first-aid measures**

*Inhalation*
After inhalation: fresh air.

*Skin contact*
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

*Eye contact*
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

*Ingestion*
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

Irritation and corrosion, Cough, Shortness of breath, agitation, spasms, Nausea, Vomiting, collapse, Circulatory collapse

Risk of serious damage to eyes.
The following applies to oxalates in general: nausea and vomiting after swallowing. Mucosal irritations, coughing, and dyspnoea after inhalation. Systemic effect: drop in the blood calcium level, toxic effect on kidneys, cardiovascular disorders.

**Indication of any immediate medical attention and special treatment needed**
No information available.

**SECTION 5. Fire-fighting measures**

**Extinguishing media**
- *Suitable extinguishing media*
  - Water, Foam, Carbon dioxide (CO2), Dry powder
- *Unsuitable extinguishing media*
  - For this substance/mixture no limitations of extinguishing agents are given.

**Special hazards arising from the substance or mixture**
- Combustible.
- Vapors are heavier than air and may spread along floors.
- Forms explosive mixtures with air on intense heating.
- Development of hazardous combustion gases or vapors possible in the event of fire.

**Advice for firefighters**
- *Special protective equipment for fire-fighters*
  - Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
- *Further information*
  - Prevent fire extinguishing water from contaminating surface water or the ground water system.

**SECTION 6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**
- Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

  - Advice for emergency responders:
    - Protective equipment see section 8.

**Environmental precautions**
- Do not let product enter drains.

**Methods and materials for containment and cleaning up**
- Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

**SECTION 7. Handling and storage**

**Precautions for safe handling**
- Observe label precautions.
Conditions for safe storage, including any incompatibilities

Tightly closed. Dry.

Store below +30°C (+86°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Threshold limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oxalic acid dihydrate 6153-56-6</strong></td>
<td>NIOSH/GUIDE</td>
<td>Recommended exposure limit (REL): 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short Term Exposure Limit (STEL): 2 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA_TRANS</td>
<td>PEL: 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z1A</td>
<td>Short Term Exposure Limit (STEL): 2 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time Weighted Average (TWA): 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>Time Weighted Average (TWA): 1 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short Term Exposure Limit (STEL): 2 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

protective clothing

Respiratory protection

required when dusts are generated.
SECTION 9. Physical and chemical properties

Physical state: solid

Color: white

Odor: odorless

Odor Threshold: Not applicable

pH: ca. 1.5 at 10 g/l

Melting point/range: 98 - 100 °C
Elimination of water of crystallization

Boiling point/boiling range: 149 - 160 °C (149 - 160 °C)
at 1,013 hPa (decomposition)

Flash point: 157 °C (157 °C)
(decomposition)

Evaporation rate: No information available.

Flammability (solid, gas): No information available.

Lower explosion limit: No information available.

Upper explosion limit: No information available.

Vapor pressure: 0.000312 hPa at 25 °C (25 °C)

Relative vapor density: No information available.

Density: 1.65 g/cm³ at 20 °C (20 °C)

Relative density: No information available.

Water solubility: > 100 g/l at 25 °C (25 °C)

Partition coefficient: n-octanol/water
log Pow: -1.7 (23 °C)
OECD Test Guideline 107 Bioaccumulation is not expected.

Autoignition temperature: > 400 °C (> 400 °C)
at 1,013 hPa
Decomposition temperature: \( \geq 110 \, ^\circ C \) (\( \geq 110 \, ^\circ C \))

Viscosity, dynamic: No information available.

Explosive properties: Not classified as explosive.

Oxidizing properties: none

Ignition temperature: Not applicable

Bulk density: 813 kg/m3

Particle size: Particle size
101 \( \mu m \)

SECTION 10. Stability and reactivity

Reactivity
Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions
Risk of explosion with:
chlorates, sodium hypochlorite, Strong oxidizing agents, silver, salts of oxyhalogenic acids
Exothermic reaction with:
bases, Ammonia, Mercury

Conditions to avoid
Strong heating.

Incompatible materials
no information available

Hazardous decomposition products
no information available

SECTION 11. Toxicological information

Information on toxicological effects
Likely route of exposure
Eye contact, Skin contact, Ingestion
Acute oral toxicity
LD50 Rat: 375 mg/kg (IUCLID) The value is given in analogy to the following substances: Oxalic acid

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity
Symptoms: mucosal irritations, Cough, Shortness of breath

Acute dermal toxicity
Acute toxicity estimate: 1,100.1 mg/kg
Expert judgment

Skin irritation
Rabbit
Result: No irritation
OECD Test Guideline 404
The value is given in analogy to the following substances: Oxalic acid

Eye irritation
Rabbit
Result: Irreversible effects on the eye
OECD Test Guideline 405
The value is given in analogy to the following substances: Oxalic acid

Causes serious eye damage.

Sensitization
Local lymph node assay (LLNA) Mouse
Result: negative
Method: OECD Test Guideline 429

The value is given in analogy to the following substances: Oxalic acid

Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471
The value is given in analogy to the following substances: Oxalic acid
Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster lung cells
Result: negative
Method: OECD Test Guideline 473
The value is given in analogy to the following substances: Oxalic acid

Specific target organ systemic toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.


Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information
Systemic effects:
After absorption:
agitation, spasms, Nausea, Vomiting, Circulatory collapse, collapse, disturbed electrolyte balance.
Secondary products cause:
Damage to:
Kidney
The following applies to oxalates in general: nausea and vomiting after swallowing. Mucosal irritations, coughing, and dyspnoea after inhalation. Systemic effect: drop in the blood calcium level, toxic effect on kidneys, cardiovascular disorders.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
static test LC50 Leuciscus idus (Golden orfe): 160 mg/l; 48 h (IUCLID) The value is given in analogy to the following substances: Oxalic acid

Toxicity to daphnia and other aquatic invertebrates
Daphnia magna (Water flea): 162.2 mg/l; 48 h
Analytical monitoring: yes
OECD Test Guideline 202 The value is given in analogy to the following substances: Oxalic acid

Persistence and degradability


Biodegradability
89 %; 20 d; aerobic
(ECHA) The value is given in analogy to the following substances: Oxalic acid
Readily biodegradable.

Bioaccumulative potential
* Partition coefficient: n-octanol/water
  log Pow: -1.7 (23 °C)
  OECD Test Guideline 107
  Bioaccumulation is not expected.

Mobility in soil
No information available.

Other adverse effects
* Surface tension
  70.1 mN/m
  at 25 °C (25 °C)

Additional ecological information
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations
The information presented only applies to the material as supplied. The identification based on characteristic(s)
or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the
waste generator to determine the toxicity and physical properties of the material generated to determine the
proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be
in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)
* UN number
  UN 3261
* Proper shipping name
  CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (OXALIC ACID)
* Class
  8
* Packing group
  III
* Environmentally hazardous
  --

Air transport (IATA)
* UN number
  UN 3261
* Proper shipping name
  CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (OXALIC ACID)
* Class
  8
* Packing group
  III
* Environmentally hazardous
  --
* Special precautions for user
  no

Sea transport (IMDG)
SECTION 15. Regulatory information

United States of America

SARA 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

DEA List I
Not listed

DEA List II
Not listed

TSCA 12b
Ingredients
Oxalic acid dihydrate 6153-56-6

US State Regulations

Massachusetts Right To Know
Ingredients
Oxalic acid dihydrate

Pennsylvania Right To Know
Ingredients
Oxalic acid dihydrate

New Jersey Right To Know
Ingredients
Oxalic acid dihydrate

**California Prop 65 Components**
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**Notification status**
- **TSCA:** All components of the product are listed in the TSCA-inventory.
- **DSL:** All components of this product are on the Canadian DSL

**SECTION 16. Other information**

**Training advice**
Provide adequate information, instruction and training for operators.

**Labeling**

*Hazard pictograms*

- Signal Word: Danger

*Hazard Statements*
- H302 + H312 Harmful if swallowed or in contact with skin.
- H318 Causes serious eye damage.

*Precautionary Statements*
- Prevention
  - P280 Wear eye protection.
- Response
  - P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
  - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P313 Get medical advice/attention.

*Full text of H-Statements referred to under sections 2 and 3.*
- H302 Harmful if swallowed.
- H312 Harmful in contact with skin.
- H318 Causes serious eye damage.

**Key or legend to abbreviations and acronyms used in the safety data sheet**
Used abbreviations and acronyms can be looked up at www.wikipedia.org.
The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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