(RS)-Malic-2,3,3-d₃ Acid

Section 1. Chemical product and company identifications

Product code: D-2122
Chemical formula: C₄H₃D₃O₅
CAS: 104596-63-6
Material uses: 6915-15-7
Synonyms: DL-Malic Acid, (+)-2-Hydroxysuccinic Acid, Apple Acid

Supplier / Manufacturer:
C/D/N Isotopes Inc.
88 Leacock Street
Pointe-Claire (Québec) H9R 1H1
Phone: 514-697-6254
Toll-Free (Canada & USA): 1-800-565-4696
Fax: 514-697-6148
Website: www.cdnisotopes.com

In case of emergency:
TOXYSCAN HOTLINE: 1-855-780-0599

Section 2. Hazards identifications

Physical state: Solid
Warning: Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.
Routes of entry: Inhalation, ingestion, skin and eyes

GHS (Globally Harmonized System of Classification and Labelling of Chemicals):

GHS Classification:
- Acute toxicity, Oral (Category 4)
- Skin irritation (Category 2)
- Serious eye damage (Category 2A)
- Specific target organ toxicity - single exposure (Category 3)

GHS Label elements:
- Pictograms: ☑️
- Signal word: Warning

Hazards statement:
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.

Precautionary statement:
- P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P302 + P350 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.

Section 3. Composition and information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>Concentration %</th>
</tr>
</thead>
<tbody>
<tr>
<td>(RS)-Malic-2,3,3-d₃ Acid</td>
<td>104596-63-6</td>
<td>&gt; 98</td>
</tr>
</tbody>
</table>
Section 4. First aid measures

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin contact: Wash off with soap and plenty of water. Consult a physician.
Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Ingestion: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Section 5. Firefighting measures

Flammability of the product: Not flammable or combustible.
Lower explosion limit: No data available
Upper explosion limit: No data available
Auto-ignition temperature: 340 °C (644 °F)
Flash point: 203 °C (397 °F)
Products of combustion: Hazardous decomposition products formed under fire conditions: Carbon oxides.
Firefighting media and instructions: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Section 6. Accidental release measures

Personal precautions: Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation. Avoid breathing dust.
Environmental precautions: Do not let product enter drains.
Methods for cleaning up: Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

Section 7. Handling and storage

Handling: Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation.
Storage: Store at room temperature. Adequate ventilation.

Section 8. Exposure Controls, Personal Protections

Engineering controls: Use mechanical exhaust or laboratory fume hood to avoid exposure.
Eyes: Safety glasses with side-shields conforming to NIOSH (US) or EN 166 (EU).
Respiratory: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US).
Hands: Handle with gloves. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Skin/body: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Section 9. Physical and chemical properties (unlabelled)

Molecular weight: 134.09 g/mol
Physical status: Solid
Color: White to off-white
Odour: No data available
Density: No data available
Melting point: 131 - 133 °C (268 - 271 °F)
Boiling point: No data available
Vapour pressure: < 0.1 hPa (< 0.1 mmHg) at 20 °C (68 °F)
Vapour density: No data available
Partition coefficient (octanol/water): log Pow: -1.26
Water solubility: Soluble
**Section 10. Stability and reactivity**

**Stability and reactivity:** Stable under recommended storage conditions.

**Incompatibility:** Oxidizing agents.

**Products of combustion:** Hazardous decomposition products formed under fire conditions: Carbon oxides.

**Reactivity conditions:** Heat.

**Section 11. Toxicological information (unlabelled)**

**Toxicological data:** DL-Malic Acid

**Information on ingredients:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>LD&lt;sub&gt;50&lt;/sub&gt;</th>
<th>LC&lt;sub&gt;50&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-Malic Acid</td>
<td>617-48-1</td>
<td>Oral - Mouse - 1,600 mg/kg</td>
<td>Intraperitoneal - Rat - 100 mg/kg</td>
</tr>
</tbody>
</table>

**Potential acute effects**
- **Eyes:** Causes serious eye irritation.
- **Skin:** Harmful if absorbed through skin. Causes skin irritation.
- **Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.
- **Ingestion:** Harmful if swallowed.

**Potential chronic effects**
- **Carcinogenic effects:** IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- **Mutagenic effects:** No data available.
- **Teratogenic effects:** No data available.
- **Medical conditions aggravated by overexposure:** No data available.

**Section 12. Ecological information**

**Ecological data:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Results</th>
<th>Species</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>DL-Malic Acid</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Effects on environment:** No data available

**Mobility:** No data available

**Environmental precautions:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Section 13. Disposal considerations**

**Waste disposal:** Contact a licensed professional waste disposal service to dispose of this material.

**Section 14. Transportation information**

**Classification DOT/IMDG/IATA label:**

**Shipping name:** Not dangerous goods

**UN number:** None

**Class:** None

**Packaging group:** None

**Additional information:** None
Section 15. Regulatory information

UNITED STATES:
NFPA classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
</tr>
<tr>
<td>Flammable</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
</tr>
<tr>
<td>Special conditions</td>
<td>None</td>
</tr>
</tbody>
</table>

Legend: 4: Severe, 3: High, 2: Moderate, 1: Slightly, 0: Not hazardous

U.S. Federal regulations:

- TSCA 8(b) inventory: DL-Malic Acid
- SARA 302/304/311/312 extremely hazardous substances: Not Listed
- SARA 302/304 emergency planning and notification: Not Listed
- SARA 302/304/311/312 hazardous chemicals: Not Listed
- SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard: Not Listed
- CWA (Clean Water Act) 307: Not Listed
- CWA (Clean Water Act) 311: Not Listed
- CAA (Clean Air Act) 112 accidental release prevention: Not Listed
- CAA (Clean Air Act) 112 regulated flammable substances: Not Listed
- CAA (Clean Air Act) 112 regulated toxic substances: Not Listed

State regulations:

- DEA List I Chemicals (Precursor Chemicals): Not Listed
- DEA List II Chemicals (Essential Chemicals): Not Listed
- Substances in Massachusetts: Not Listed
- New York – Dangerous substances with acute effects: Not Listed
- Dangerous substances in Pennsylvania – right to know: Not Listed

WHMIS (Canada):

D2B - Toxic material causing other toxic effects

Section 16. Additional information

References:

- Manufacturer’s Material Safety Data Sheet.
- 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. -Canada
- Federal act on the controlled products
- Toxicological repertory, HSC.
- Material safety data sheet from the components.

Date of issue: November 6th, 2018
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Elaborated by: Toxyscan Inc., 1-866-780-0599

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