Safety Data Sheet
acc. to OSHA HCS

1 Identification

· Product identifier
  · Trade name: Succinic Acid synthetic
  · Product number: 2267
  · CAS Number: 110-15-6
  · EC number: 203-740-4
· Application of the substance / the mixture: Food flavorings

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS07
  · Eye Irrit. 2A H319 Causes serious eye irritation.
· Label elements: Harmful in contact with skin or if inhaled.
· GHS label elements
  Pictograms on label shall be in the shape of a square set at a point and shall include a black hazard symbol on a white background with a red frame sufficiently wide to be clearly visible. The substance is classified and labeled according to the Globally Harmonized System (GHS).
· Hazard pictograms
  GHS07
· Signal word: Warning
Trade name: Succinic Acid synthetic

- **Hazard statements**
  - H319 Causes serious eye irritation.

- **Precautionary statements**
  - P264 Wash thoroughly after handling.
  - P280 Wear eye protection / face protection.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P337+P313 If eye irritation persists: Get medical advice/attention.

- **Classification system:**
  - NFPA ratings (scale 0 - 4)
    - Health = 2
    - Fire = 1
    - Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    - Health = 2
    - Fire = 1
    - Reactivity = 0

- **Other hazards**
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

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### 3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
  - 110-15-6 succinic acid
- Identification number(s)
  - EC number: 203-740-4

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### 4 First-aid measures

- **Description of first aid measures**
  - **After inhalation:** Supply fresh air; consult doctor in case of complaints.
  - **After skin contact:** Generally the product does not irritate the skin.
  - **After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - **After swallowing:** If symptoms persist consult doctor.
  - **Information for doctor:**
    - Most important symptoms and effects, both acute and delayed
      - No further relevant information available.
    - Indication of any immediate medical attention and special treatment needed
      - No further relevant information available.
5 Fire-fighting measures

· Extinguishing media
  · Suitable extinguishing agents:
    CO₂, powder or alcoholresistant foam.
    CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
    Use fire fighting measures that suit the environment.
  · Special hazards arising from the substance or mixture: No further relevant information available.

· Advice for firefighters
  · Protective equipment: No special measures required.
  · Additional information
    Cool endangered receptacles with water spray.
    Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures: Not required.
· Environmental precautions: Do not allow to enter sewers/ surface or ground water.
· Methods and material for containment and cleaning up: Pick up mechanically.
· Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

· Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th></th>
<th>PAC-1:</th>
<th>PAC-2:</th>
<th>PAC-3:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.8 mg/m³</td>
<td>75 mg/m³</td>
<td>450 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

· Handling:
  · Precautions for safe handling: No special precautions are necessary if used correctly.
  · Information about protection against explosions and fires: No special measures required.
· Conditions for safe storage, including any incompatibilities
· Storage:
  · Requirements to be met by storerooms and receptacles:
    No special requirements.
    Please refer to product specification for product storage requirements.
  · Information about storage in one common storage facility: Not required.
  · Further information about storage conditions: Keep receptacle tightly sealed.
· Specific end use(s): No further relevant information available.
8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists that were valid during the creation were used as a basis.

- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes.
  Avoid contact with the eyes and skin.
- Breathing equipment: Not required.
- Protection of hands:

  Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material should be based on consideration of the penetration times, rates of diffusion and the degradation

  Material of gloves
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

  Penetration time of glove material
  The exact break through time has to be determined by the manufacturer of the protective gloves and has to be observed.

- Eye protection:

  Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General information
  - Appearance:
  - Form: Solid
  - Color: According to product specification
  - Odor: According to product specification
  - Odor threshold: Not determined.
- pH-value: Not applicable.
## Trade name: Succinic Acid synthetic

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>184 °C (363.2 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>235 °C (455 °F)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>&gt;110 °C (&gt;230 °F)</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Product is not flammable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>630 °C (1,166 °F)</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td>Lower:</td>
<td></td>
</tr>
<tr>
<td>Upper:</td>
<td></td>
</tr>
<tr>
<td><strong>Vapor pressure:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Density at 20 °C (68 °F):</strong></td>
<td>0.6 g/cm³ (5.007 lbs/gal)</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with</strong></td>
<td>70 g/l</td>
</tr>
<tr>
<td>Water at 20 °C (68 °F):</td>
<td></td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>VOC content:</td>
<td>0.00 %</td>
</tr>
<tr>
<td>0.0 g/l / 0.00 lb/gal</td>
<td></td>
</tr>
<tr>
<td><strong>Solids content:</strong></td>
<td>100.0 %</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

### 10 Stability and reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**
  - **Thermal decomposition / conditions to be avoided**: No decomposition if used according to specifications.
  - **Possibility of hazardous reactions**: No dangerous reactions known.
  - **Conditions to avoid**: No further relevant information available.
  - **Incompatible materials**: No further relevant information available.
  - **Hazardous decomposition products**: No dangerous decomposition products known.
11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    - ATE (Acute Toxicity Estimate)
      - Oral LD50 2,260 mg/kg (rat)
    - CAS: 110-15-6 succinic acid
      - Oral LD50 2,260 mg/kg (rat)
    - Primary irritant effect:
      - on the skin: No irritant effect.
      - on the eye: Irritating effect.
    - Sensitization: No sensitizing effects known.
    - Additional toxicological information:
      - Carcinogenic categories
        - IARC (International Agency for Research on Cancer)
          - Substance is not listed.
        - NTP (National Toxicology Program)
          - Substance is not listed.
        - OSHA-Ca (Occupational Safety & Health Administration)
          - Substance is not listed.

12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
- General notes:
  - Water hazard class 1 (Assessment by list): slightly hazardous for water
  - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
- Recommendation:
  - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
14 Transport information

- **UN-Number**
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- **UN proper shipping name**
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated

- **Transport hazard class(es)**
  - DOT, ADR, ADN, IMDG, IATA: Not Regulated
  - Class: Not Regulated

- **Packing group**
  - DOT, ADR, IMDG, IATA: Not Regulated

- **Environmental hazards:**
  - Marine pollutant: No

- **Special precautions for user**
  - Not applicable.

- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
  - Not applicable.

- **Transport/Additional information:**
  - Not dangerous according to the above specifications.

- **UN "Model Regulation":**
  - Not Regulated

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**

  - **Section 355 (extremely hazardous substances):**
    - Substance is not listed.

  - **Section 313 (Specific toxic chemical listings):**
    - Substance is not listed.

  - **TSCA (Toxic Substances Control Act):**
    - Substance is listed.

  - **Proposition 65**

  - **Chemicals known to cause cancer:**
    - Substance is not listed.

  - **Chemicals known to cause reproductive toxicity for females:**
    - Substance is not listed.

  - **Chemicals known to cause reproductive toxicity for males:**
    - Substance is not listed.
Trade name: Succinic Acid synthetic

- **Chemicals known to cause developmental toxicity:**
  Substance is not listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    Substance is not listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    Substance is not listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    Substance is not listed.

- **GHS label elements**
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  The substance is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**
  - **GHS07**

- **Signal word** Warning
- **Hazard statements**
  - **H319** Causes serious eye irritation.

- **Precautionary statements**
  - **P264** Wash thoroughly after handling.
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  - **P305+P351+P338** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - **P337+P313** If eye irritation persists: Get medical advice/attention.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** Product Safety Department
- **Contact:**
  Product Safety Department
  productsafety@adv-bio.com
- **Date of preparation / last revision** 02/11/2019 / -
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
<table>
<thead>
<tr>
<th>HMIS: Hazardous Materials Identification System (USA)</th>
<th>(Continuation of page 8)</th>
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<tbody>
<tr>
<td>VOC: Volatile Organic Compounds (USA, EU)</td>
<td></td>
</tr>
<tr>
<td>LC50: Lethal concentration, 50 percent</td>
<td></td>
</tr>
<tr>
<td>LD50: Lethal dose, 50 percent</td>
<td></td>
</tr>
<tr>
<td>PBT: Persistent, Bioaccumulative and Toxic</td>
<td></td>
</tr>
<tr>
<td>vPvB: very Persistent and very Bioaccumulative</td>
<td></td>
</tr>
<tr>
<td>NIOSH: National Institute for Occupational Safety</td>
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<tr>
<td>OSHA: Occupational Safety &amp; Health</td>
<td></td>
</tr>
<tr>
<td>TLV: Threshold Limit Value</td>
<td></td>
</tr>
<tr>
<td>PEL: Permissible Exposure Limit</td>
<td></td>
</tr>
<tr>
<td>REL: Recommended Exposure Limit</td>
<td></td>
</tr>
<tr>
<td>Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A</td>
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</tr>
</tbody>
</table>