1 Identification

· Product identifier

· Trade name: Delta Tetradecalactone Natural

· Product number: 1759

· CAS Number: 2721-22-4

· EC number: 220-334-2

· Application of the substance / the mixture: Flavoring Ingredients

Details of the supplier of the safety data sheet

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. Advanced Biotech makes NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the Advanced Biotech product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of an Advanced Biotech product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the Advanced Biotech product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

· Manufacturer/Supplier:
Advanced Biotech
10 Taft Road
Totowa, NJ 07512 USA

· Information department:
Product Safety Department
productsafety@adv-bio.com

· Emergency telephone number:
Infotrac: 1-800-535-5053 (Domestic) & 1-352-323-3500 (International)
Email: responders@infotrac.net & During normal business hours: 1-973-339-6242

2 Hazard(s) identification

· Classification of the substance or mixture
The substance is not classified, according to the Globally Harmonized System (GHS).

· 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.

· Hazard pictograms
Not Applicable

· Signal word
Not Applicable

· Hazard statements
Not Applicable

· Classification system:

· NFPA ratings (scale 0 - 4)

Health = 0
Fire = 1
Reactivity = 0

· HMIS-ratings (scale 0 - 4)

Health = 0
Fire = 1
Reactivity = 0

(Continued on page 2)
Safety Data Sheet
acc. to OSHA HCS (29 CFR § 1910.1200)

Trade name: Delta Tetradecalactone Natural

3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
  2721-22-4 Delta Tetradecalactone
- Identification number(s)
  EC number: 220-334-2

4 First-aid measures

- Description of first aid measures
  - General information: No special measures required.
  - 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.
  - 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:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
Trade name: Delta Tetradecalactone Natural

See Section 13 for disposal information.

- **Protective Action Criteria for Chemicals**
  
  - **PAC-1**: Substance is not listed.
  
  - **PAC-2**: Substance is not listed.
  
  - **PAC-3**: Substance is not listed.

### 7 Handling and storage

- **Handling**: No special measures required.
  
  - **Precautions for safe handling**: No special measures required.
  
  - **Information about protection against explosions and fires**: No special measures required.
  
  - **Conditions for safe storage, including any incompatibilities**
  
  - **Storage**: 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**: None.
  
  - **Specific end use(s)**: No further relevant information available.

### 8 Exposure controls/personal protection

- **Exposure controls**
  
  - **Personal protective equipment**: The usual precautionary measures for handling chemicals should be followed.
  
  - **Breathing equipment**: Not required.
  
  - **Protection of hands**: 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.

(Continued on page 4)
Trade name: Delta Tetradecalactone Natural

· Eye protection: Goggles recommended during refilling.

9 Physical and chemical properties

· Information on basic physical and chemical properties
  General Information: Molecular Weight: 226.36 g/mol
  · Appearance:
    Form: Liquid
    Color: According to product specification
  · Odor:
    Odor: Weak, characteristic
    Odor threshold: Not determined.
  · pH-value: Not determined.
  · Change in condition
    Melting point/Melting range: Undetermined.
    Boiling point/Boiling range: 130-135 °C (266-275 °F)
  · Flash point: 112.8 °C (235 °F)
  · Flammability (solid, gaseous): Not applicable.
  · Decomposition temperature: Not determined.
  · Auto igniting: Not determined.
  · Danger of explosion: Product does not present an explosion hazard.
  · Explosion limits:
    Lower: Not determined.
    Upper: Not determined.
  · Vapor pressure: Not determined.
  · Density at 20 °C (68 °F):
    Relative density: Not determined.
  · Vapor density: Not determined.
  · Evaporation rate: Not determined.
  · Solubility in / Miscibility with
    Water: Not miscible or difficult to mix.
  · Partition coefficient (n-octanol/water): Not determined.
  · Viscosity:
    Dynamic: Not determined.
    Kinematic: Not determined.
    VOC content:
      0.00 %
      0.0 g/l / 0.00 lb/gal
  · Other information
    No further relevant information available.

10 Stability and reactivity

· Reactivity: No further relevant information available.
52.0.9

· 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:
  · Primary irritant effect:
    · on the skin: No irritant effect.
    · on the eye: No irritating effect.
  · Sensitization: No sensitizing effects known.
· Additional toxicological information:
  When used and handled according to specifications, the product does not have any harmful effects 
  according to our experience and the information provided to us.
  The substance is not subject to classification.

· 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 (Self-assessment): 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: Smaller quantities can be disposed of with household waste.
  
- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

<table>
<thead>
<tr>
<th>DOT, ADN, IMDG, IATA</th>
<th>Not Regulated</th>
</tr>
</thead>
<tbody>
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<td>UN proper shipping name</td>
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<tr>
<td>Transport hazard class(es)</td>
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<tr>
<td>Class</td>
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<tr>
<td>Packing group</td>
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<tr>
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<tr>
<td>Special precautions for user</td>
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</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Transport/Additional information:</td>
<td>Not dangerous according to the above specifications.</td>
</tr>
<tr>
<td>UN &quot;Model Regulation&quot;:</td>
<td>Not Regulated</td>
</tr>
</tbody>
</table>

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):
  ACTIVE

- Hazardous Air Pollutants
  Substance is not listed.

- Proposition 65
  - Chemicals known to cause cancer:
    Substance is not listed.
Trade name: Delta Tetradecalactone Natural

- **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
- **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**
  - 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.
  - **Hazard pictograms** Not Applicable
  - **Signal word** Not Applicable
  - **Hazard statements** Not Applicable
  - **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** 01/12/2021 / -
- **Abbreviations and acronyms:**
  - ADR: Accord relatif au transport international 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)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit