1 Identification

- **Product identifier**
  - **Trade name:** Massoia Lactone 95% natural
  - **Product number:** 1164
  - **CAS Number:** 54814-64-1
  - **EC number:** 259-359-1
  - **Application of the substance / the mixture:** Food flavorings

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Advanced Biotech
    10 Taft Road
    Totowa, NJ 07512 USA
  - **Information department:**
    Product Safety Department
    productsafety@adv-bio.com
  - **Emergency telephone number:**
    1(800)535-5053 (Info Trac)
    1(352)323-3500 (International)
    During normal business hours: 1(973)339-6242

2 Hazard(s) identification

- **Classification of the substance or mixture**

  ![GHS07]

  Skin Irrit. 2  H315  Causes skin irritation.
  Skin Sens. 1  H317  May cause an allergic skin reaction.

- **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).

(Continued on page 2)
Trade name: Massoia Lactone 95% natural

- Hazard pictograms

- Signal word Warning

- Hazard-determining components of labeling:
  Massoia Lactone

- Hazard statements
  H315 Causes skin irritation.
  H317 May cause an allergic skin reaction.

- Precautionary statements
  P261 Avoid breathing dust/fume/gas/mist/vapors/spray
  P280 Wear protective gloves.
  P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
  P321 Specific treatment (see on this label).
  P363 Wash contaminated clothing before reuse.
  P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- Classification system:
  - NFPA ratings (scale 0 - 4)
    Health = 1
    Fire = 1
    Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    HEALTH 1 Health = 1
    FIRE 1 Fire = 1
    REACTIVITY 0 Reactivity = 0

- Other hazards

- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Substances
  - CAS No. Description
    54814-64-1 Massoia Lactone

- Identification number(s)
  - EC number: 259-359-1
4 First-aid measures

· Description of first aid measures
· General information: Immediately remove any clothing soiled by the product.
· After inhalation:
  Supply fresh air and be sure to call for a doctor.
  In case of unconsciousness place patient stably in side position for transportation.
· After skin contact: Immediately wash with water and soap and rinse thoroughly.
· 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, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· 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).
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
· 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
  · PAC-1: Substance is not listed.
  · PAC-2: Substance is not listed.
Trade name: Massoia Lactone 95% natural

7 Handling and storage

· Handling:
  · Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  · 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.
  · 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

· 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:
      Immediately remove all soiled and contaminated clothing.
      Wash hands before breaks and at the end of work.
    · Breathing equipment:
      In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
  · 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.
### 9 Physical and chemical properties

- **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**: Goggles recommended during refilling.

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td></td>
</tr>
<tr>
<td>Form: Liquid</td>
<td></td>
</tr>
<tr>
<td>Color: According to product specification</td>
<td></td>
</tr>
<tr>
<td>Odor: According to product specification</td>
<td></td>
</tr>
<tr>
<td>Odor threshold: Not determined.</td>
<td></td>
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<tr>
<td><strong>pH-value:</strong> Not determined.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in condition</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Melting point/Melting range: Undetermined.</td>
<td></td>
</tr>
<tr>
<td>Boiling point/Boiling range: Undetermined.</td>
<td></td>
</tr>
</tbody>
</table>

- **Flash point**: >93 °C (>199.4 °F)
- **Flammability (solid, gaseous)**: Not applicable.
- **Decomposition temperature**: Not determined.
- **Auto igniting**: Not determined.
- **Danger of explosion**: Product does not present an explosion hazard.

<table>
<thead>
<tr>
<th>Explosion limits</th>
<th></th>
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<tbody>
<tr>
<td>Lower: Not determined.</td>
<td></td>
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<tr>
<td>Upper: Not determined.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Vapor pressure:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not determined.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Density at 20 °C (68 °F):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.987 g/cm³ (8.23652 lbs/gal)</td>
<td></td>
</tr>
<tr>
<td>Relative density: Not determined.</td>
<td></td>
</tr>
<tr>
<td>Vapor density: Not determined.</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate: Not determined.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility in / Miscibility with</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water: Not miscible or difficult to mix.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Partition coefficient (n-octanol/water):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not determined.</td>
<td></td>
</tr>
</tbody>
</table>

| Viscosity: |  |
| Dynamic: Not determined. |  |
| Kinematic: Not determined. |  |
| VOC content: 0.00 % |  |
| 0.0 g/l / 0.00 lb/gal |  |
10 Stability and reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**: No decomposition if used according to specifications.
- **Thermal decomposition / conditions to be avoided**: 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**: Sensitization possible through skin contact.
  - **Primary irritant effect**: Sensitization possible through skin contact.
  - **on the skin**: No irritant effect.
  - **on the eye**: No irritating effect.
- **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 2 (Assessment by list): hazardous for water
    Do not allow product to reach ground water, water course or sewage system.
    Danger to drinking water if even small quantities leak into the ground.
### 47.0.11

- **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.
- **Uncleaned packagings**
  - **Recommendation**: Disposal must be made according to official regulations.

### 14 Transport information

<table>
<thead>
<tr>
<th></th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
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<th>DOT, ADR, ADN, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UN-Number</strong></td>
<td>Not Regulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UN proper shipping name</strong></td>
<td>Not Regulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport hazard class(es)</strong></td>
<td>Not Regulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
<td>Not Regulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental hazards</strong></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marine pollutant</strong></td>
<td>Not applicable.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Special precautions for user</strong></td>
<td>Not applicable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</strong></td>
<td>Not applicable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport/Additional information</strong></td>
<td>Not dangerous according to the above specifications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UN &quot;Model Regulation&quot;</strong></td>
<td>Not Regulated</td>
<td></td>
<td></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):
Substance is not listed.

TSCA new (21st Century Act) (Substances not listed)
CAS: 54814-64-1 Massoia Lactone

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.

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

Hazard pictograms

GHS07

Signal word Warning

Hazard-determining components of labeling:
Massoia Lactone

Hazard statements
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.

Precautionary statements
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
Trade name: Massoia Lactone 95% natural

(Continuation of page 8)

P280 Wear protective gloves.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P321 Specific treatment (see on this label).
P363 Wash contaminated clothing before reuse.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- 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 08/24/2018 / -
- 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)
  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
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Skin Sens. 1: Skin sensitisation – Category 1