1 Identification

· Product identifier

· Trade name: Mixed Methyl Ketones 10822455 I Type natural

· Product number: 1665

· CAS Number: 112-12-9/821-55-6 /110-43-0

· EINECS Number: 203-937-5/212-480-0/203-767-1

· Application of the substance / the mixture Food flavorings

· Details of the supplier of the safety data sheet

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· 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.
Eye Irrit. 2A H319 Causes serious eye irritation.

Flam. Liq. 4 H227 Combustible liquid.

· 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 product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms

GHS07

(Continued on page 2)
Signal word Warning

Hazard statements
H227 Combustible liquid.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280 Wear protective gloves/protective clothing/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.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P403+P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

- NFPA ratings (scale 0 - 4)
  - Health = 2
  - Fire = 2
  - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - Health = 2
  - Fire = 2
  - Reactivity = 0

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

3 Composition/information on ingredients

- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  
<table>
<thead>
<tr>
<th>CAS: 821-55-6</th>
<th>2-Nonanone</th>
<th>10-30%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Flm. Liq. 4, H227</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 110-43-0</th>
<th>heptan-2-one</th>
<th>10-20%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flm. Liq. 3, H226; Acute Tox. 4, H302; Acute Tox. 4, H332</td>
<td></td>
</tr>
</tbody>
</table>

4 First-aid measures

- Description of first aid measures
- General information: Immediately remove any clothing soiled by the product.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Immediately rinse with water.
- 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.
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
  - Wear protective equipment. Keep unprotected persons away.

- 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

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>CAS: 112-12-9 2-Undecanone</th>
<th>0.91 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 821-55-6 2-Nonanone</td>
<td>0.51 ppm</td>
</tr>
<tr>
<td></td>
<td>CAS: 110-43-0 heptan-2-one</td>
<td>150 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th>CAS: 112-12-9 2-Undecanone</th>
<th>10 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 821-55-6 2-Nonanone</td>
<td>5.6 ppm</td>
</tr>
<tr>
<td></td>
<td>CAS: 110-43-0 heptan-2-one</td>
<td>670 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th>CAS: 112-12-9 2-Undecanone</th>
<th>60 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAS: 821-55-6 2-Nonanone</td>
<td>34 ppm</td>
</tr>
<tr>
<td></td>
<td>CAS: 110-43-0 heptan-2-one</td>
<td>4000* ppm</td>
</tr>
</tbody>
</table>

(Continued on page 4)
7 Handling and storage

- **Handling:** No special precautions are necessary if used correctly.
- **Precautions for safe handling:**
  - Keep ignition sources away - Do not smoke.
- **Information about protection against explosions and fires:**
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
  - Requirements to be met by storerooms and receptacles:
  - 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:**
  - The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
  - At this time, the remaining constituent has no known exposure limits.

<table>
<thead>
<tr>
<th>CAS: 110-43-0 heptan-2-one</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
</tr>
<tr>
<td>REL</td>
</tr>
<tr>
<td>TLV</td>
</tr>
</tbody>
</table>

- **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](image)

  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.
9 Physical and chemical properties

- **Appearance:**
  - Form: Liquid
  - Color: According to product specification
  - Odor: According to product specification
  - Odor threshold: Not determined.

- **pH-value:** Not determined.

- **Change in condition**
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.

- **Flash point:** 63.1 °C (145.6 °F)

- **Flammability (solid, gaseous):** Not applicable.

- **Ignition temperature:** 533 °C (991.4 °F)

- **Decomposition temperature:** Not determined.

- **Auto igniting:** Product is not selfigniting.

- **Danger of explosion:** Not determined.

- **Explosion limits:**
  - Lower: 1 Vol %
  - Upper: 5.5 Vol %

- **Vapor pressure at 20 °C (68 °F):** 3.5 hPa (2.6 mm Hg)

- **Density at 20 °C (68 °F):** 0.832 g/cm³ (6.94304 lbs/gal)
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: Not determined.

- **Solubility in / Miscibility with Water:** Not miscible or difficult to mix.
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 | 2,911-5,521 mg/kg (rat) |
    | CAS: 821-55-6 2-Nonanone | Inhalative LC50/4 h | 55-110 mg/l |
    | CAS: 110-43-0 heptan-2-one | Oral LD50 | 3,200 mg/kg (rat) |
    | | Dermal LD50 | >5,000 mg/kg (rabbit) |
    | | Oral LD50 | 1,670 mg/kg (rat) |
    | | Dermal LD50 | 12,600 mg/kg (rabbit) |
    | | Inhalative LC50/4 h | 11 mg/l (ATE) |

- **Primary irritant effect**:
- **on the skin**: No irritant effect.
- **on the eye**: Irritating effect.
- **Sensitization**: No sensitizing effects known.
- **Additional toxicological information**:
The product shows the following dangers according to internally approved calculation methods for preparations:
- **Irritant**
Trade name: Mixed Methyl Ketones 10822455 I Type natural

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 (Self-assessment): 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.
  - 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

- UN-Number
  - DOT, ADR, IMDG, IATA: UN1110

- UN proper shipping name
  - DOT: n-Amyl methyl ketone mixture
  - ADR: 1110 n-AMYL METHYL KETONE mixture, ENVIRONMENTALLY HAZARDOUS
  - IMDG, IATA: n-AMYL METHYL KETONE mixture

(Continued on page 8)
Trade name: Mixed Methyl Ketones 10822455 I Type natural

<table>
<thead>
<tr>
<th>· Transport hazard class(es)</th>
<th>· DOT, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>3 Flammable liquids</td>
</tr>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

| · ADR                        |                          |
| Class                       | 3 (F1) Flammable liquids |
| Label                       | 3                |

| · Packing group             | DOT, ADR, IMDG, IATA   |
|                            | III                  |

| · Environmental hazards:    | Not applicable.       |

| · Special precautions for user | Warning: Flammable liquids |
| · Danger code (Kemler):        | 30                   |
| · EMS Number:                 | F-E,S-D              |
| · Stowage Category            | A                    |

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

| · Transport/Additional information: |                      |
| · DOT                               |                        |
| · Quantity limitations              | On passenger aircraft/rail: 60 L |
|                                     | On cargo aircraft only: 220 L |

| · ADR                              | Code: E1              |
| · Excepted quantities (EQ)         | Maximum net quantity per inner packaging: 30 ml |
|                                     | Maximum net quantity per outer packaging: 1000 ml |

| · IMDG                            | 5L                    |
| · Limited quantities (LQ)         | Code: E1              |
| · Excepted quantities (EQ)        | Maximum net quantity per inner packaging: 30 ml |
|                                     | Maximum net quantity per outer packaging: 1000 ml |

| · UN "Model Regulation":          | UN 1110 N-AMYL METHYL KETONE MIXTURE, 3, III, ENVIRONMENTALLY HAZARDOUS |

(Continued on page 9)
# 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):**
    - None of the ingredients is listed.
  - **TSCA (Toxic Substances Control Act):**
    - All ingredients are listed.
  - **TSCA new (21st Century Act): (Substances not listed)**
    - CAS: 821-55-6 2-Nonanone
- **Proposition 65**
  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for females:**
    - None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    - None of the ingredients is listed.
  - **Chemicals known to cause developmental toxicity:**
    - None of the ingredients is listed.
- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    - None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients is 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 product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS07
- **Signal word** Warning
- **Hazard statements**
  - H227 Combustible liquid.
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.
### Precautionary statements

<table>
<thead>
<tr>
<th>Code</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>P210</td>
<td>Keep away from heat/sparks/open flames/hot surfaces. - No smoking.</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>P305+P351+P338</td>
<td>If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P332+P313</td>
<td>If skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P403+P235</td>
<td>Store in a well-ventilated place. Keep cool.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents/container in accordance with local/regional/national/international regulations.</td>
</tr>
</tbody>
</table>

### 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.

#### Relevant phrases
- H226 Flammable liquid and vapor.
- H227 Combustible liquid.
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.

#### 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
- ELINCS: European List of Notified 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)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- 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
- Flam. Liq. 3: Flammable liquids – Category 3
- Flam. Liq. 4: Flammable liquids – Category 4
- Acute Tox. 4: Acute toxicity – Category 4
- Skin Irrit. 2: Skin corrosion/irritation – Category 2
- Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A