1 Identification

- **Product identifier**
- **Trade name:** 5-Methyl-2-Hepten-4-one 1% EtOH natural
- **Product number:** 1667
- **CAS Number:** 81925-81-7 / 64-17-5
- **EINECS Number:** 209-990-2 / 200-578-6
- **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**
  
  ![Flame](GHS02)
  Flam. Liq. 2 H225 Highly flammable liquid and vapor.

  ![Skin Sens.](GHS07)
  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 product is classified and labeled according to the Globally Harmonized System (GHS).
Hazard pictograms

GHS02  GHS07

Signal word Danger

Hazard-determining components of labeling:

5-Methyl-2-Hepten-4-one

Hazard statements

H225 Highly flammable liquid and vapor.
H317 May cause an allergic skin reaction.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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 = 0
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 0
Fire = 3
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

Composition/information on ingredients

Description: Mixture of the substances listed below with nonhazardous additions.
Trade name: 5-Methyl-2-Hepten-4-one 1% EtOH natural

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 a 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.
Trade name: 5-Methyl-2-Hepten-4-one 1% EtOH natural

(Continuation of page 3)

- 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: 64-17-5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ethyl alcohol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2:</th>
<th>CAS: 64-17-5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ethyl alcohol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-3:</th>
<th>CAS: 64-17-5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ethyl alcohol</td>
</tr>
</tbody>
</table>

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:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.

- Conditions for safe storage, including any incompatibilities

- Storage:
  - Requirements to be met by storerooms and receptacles: Store in a cool location.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions:
    Keep receptacle tightly sealed.
    Store in cool, dry conditions in well sealed receptacles.

- 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: 64-17-5 ethyl alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
</tr>
<tr>
<td>REL</td>
</tr>
<tr>
<td>TLV</td>
</tr>
</tbody>
</table>
47.0.11

· 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· 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: Liquid
  Color: According to product specification
  Odor: According to product specification
  Odor threshold: Not determined.

· pH-value: Not determined.

(Continued on page 6)
Trade name: 5-Methyl-2-Hepten-4-one 1% EtOH natural

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range</td>
<td>-114.5 °C (-174.1 °F)</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Undetermined</td>
</tr>
<tr>
<td>Flash point</td>
<td>15 °C (59 °F)</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>425 °C (797 °F)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product is not explosive. However, formation of explosive air/vapor mixtures are possible.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>3.5 Vol %</td>
</tr>
<tr>
<td>Upper</td>
<td>15 Vol %</td>
</tr>
<tr>
<td>Vapor pressure at 20 °C (68 °F)</td>
<td>59 hPa (44.3 mm Hg)</td>
</tr>
<tr>
<td>Density at 20 °C (68 °F)</td>
<td>0.815 g/cm³ (6.80118 lbs/gal)</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water at 20 °C (68 °F)</td>
<td>1,000 g/l</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not determined</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>Not determined</td>
</tr>
<tr>
<td>Kinematic</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solvent content</td>
<td></td>
</tr>
<tr>
<td>Organic solvents</td>
<td>99.0 %</td>
</tr>
<tr>
<td>VOC content</td>
<td>99.00 %</td>
</tr>
<tr>
<td>Other information</td>
<td></td>
</tr>
<tr>
<td>§806.8 g/l / 6.73 lb/gal</td>
<td></td>
</tr>
</tbody>
</table>

10 Stability and reactivity

· Reactivity: No further relevant information available.
· Chemical stability: No further relevant information available.
· 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.
Safety Data Sheet  
acc. to OSHA HCS

Trade name: 5-Methyl-2-Hepten-4-one 1% EtOH natural

11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      | CAS: 64-17-5 ethyl alcohol |
      | Oral LD50               | 7,060 mg/kg (rat) |
      | Inhalative LC50/4 h     | 20,000 mg/l (rat) |
  - Primary irritant effect:
    - on the skin: No irritant effect.
    - on the eye: No irritating effect.
    - Sensitization: Sensitization possible through skin contact.
  - Additional toxicological information:
    The product shows the following dangers according to internally approved calculation methods for preparations:
    Irritant

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    | CAS: 64-17-5 ethyl alcohol | 1 |
  - NTP (National Toxicology Program)
    None of the ingredients is listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is 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 (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.
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.
  - **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA: UN1170

- **UN proper shipping name**
  - DOT: Ethanol solutions
  - ADR: 1170 Ethanol solutions
  - IMDG: ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
  - IATA: ETHANOL SOLUTION

- **Transport hazard class(es)**
  - **DOT**
    - **Class:** 3 Flammable liquids
    - **Label:** 3
  - **ADR**
    - **Class:** 3 (F1) Flammable liquids
    - **Label:** 3
<table>
<thead>
<tr>
<th>IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
</tr>
<tr>
<td><strong>Label</strong></td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
</tr>
<tr>
<td><strong>DOT, ADR, IMDG, IATA</strong></td>
</tr>
<tr>
<td><strong>Environmental hazards:</strong></td>
</tr>
<tr>
<td><strong>Marine pollutant:</strong></td>
</tr>
<tr>
<td><strong>Special precautions for user</strong></td>
</tr>
<tr>
<td><strong>Danger code (Kemler):</strong></td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
</tr>
<tr>
<td><strong>Stowage Category</strong></td>
</tr>
</tbody>
</table>

| **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** |  |
| **Excepted quantities (EQ)** | Code: E1 |
| | Maximum net quantity per inner packaging: 30 ml |
| | Maximum net quantity per outer packaging: 1000 ml |
| **IMDG** |  |
| **Limited quantities (LQ)** | 5L |
| **Excepted quantities (EQ)** | Code: E1 |
| | Maximum net quantity per inner packaging: 30 ml |
| | Maximum net quantity per outer packaging: 1000 ml |
| **UN "Model Regulation":** | UN 1170 ETHANOL SOLUTIONS, 3, III |

**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: 81925-81-7 5-Methyl-2-Hepten-4-one

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:
CAS: 64-17-5 ethyl alcohol

Carcinogenic categories

EPA (Environmental Protection Agency)
None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)
CAS: 64-17-5 ethyl alcohol A3

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

GHS02 GHS07

Signal word Danger

Hazard-determining components of labeling:
5-Methyl-2-Hepten-4-one

Hazard statements
H225 Highly flammable liquid and vapor. 
H317 May cause an allergic skin reaction. 

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
## 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
- H225 Highly flammable liquid and vapor.
- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.

### Department issuing SDS
- Product Safety Department

### Contact
- Product Safety Department
- productssafety@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
- 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. 2: Flammable liquids – Category 2
- Flam. Liq. 3: Flammable liquids – Category 3
- Skin Irrit. 2: Skin corrosion/irritation – Category 2
- Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
- Skin Sens. 1: Skin sensitisation – Category 1