1 Identification

- **Product identifier**
- **Trade name:** 4-Terpineol Natural
- **Product number:** 1177
- **CAS Number:** 562-74-3
- **EC number:** 209-235-5
- **Application of the substance / the mixture** Food flavorings

**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:**
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

  Acute Tox. 4  H302  Harmful if swallowed.
  Skin Irrit. 2  H315  Causes skin 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 substance is classified and labeled according to the Globally Harmonized System (GHS).
Trade name: 4-Terpineol Natural

· Hazard pictograms

GHS07

· Signal word Warning

· Hazard-determining components of labeling:
  4-Terpineol

· Hazard statements
  H227 Combustible liquid.
  H302 Harmful if swallowed.
  H315 Causes skin 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.
  P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
  P330 Rinse mouth.
  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 = 1
    - Fire = 2
    - Reactivity = 0

  · HMIS-ratings (scale 0 - 4)
    - HEALTH 1 Health = 1
    - FIRE 2 Fire = 2
    - REACTIVITY 0 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
  562-74-3 4-Terpineol

· Identification number(s)
  · EC number: 209-235-5
4 First-aid measures

· Description of first aid measures
  · General information: Immediately remove any clothing soiled by the product. Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  · 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.
  · After swallowing: Immediately call 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.

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
  · PAC-1:
    Substance is not listed.
  · PAC-2:
    Substance is not listed.
7 Handling and storage

· Handling:
  · Precautions for safe handling: No special precautions are necessary if used correctly.
  · Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
· 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.
    · 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.

(Continued on page 5)
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.
  - Change in condition
    - Melting point/Melting range: Undetermined.
    - Boiling point/Boiling range: 88 °C (190.4 °F) (@ 6 mm Hg)
  - Flash point: 91 °C (195.8 °F)
  - Flammability (solid, gaseous): Not applicable.
  - Decomposition temperature: Not determined.
  - Auto igniting: Not determined.
  - Danger of explosion: Not determined.
  - Explosion limits:
    - Lower: Not determined.
    - Upper: Not determined.
  - Vapor pressure: Not determined.
  - Density at 20 °C (68 °F): 0.935 g/cm³ (7.80258 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.
  - 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.
11 Toxicological information

- Information on toxicological effects
- Acute toxicity:

- LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>ATE (Acute Toxicity Estimate)</th>
<th>CAS: 562-74-3 4-Terpineol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50 1,300 mg/kg (rat)</td>
<td>Oral LD50 1,300 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal LD50 &gt;2,500 mg/kg (rabbit)</td>
<td>Dermal LD50 &gt;2,500 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: No 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 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.
Trade name: 4-Terpineol Natural

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, 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**
  - Not applicable.
- **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)**: ACTIVE

(Continued on page 8)
### Hazardous Air Pollutants
Substance is not listed.

### Proposition 65
- **Chemicals known to cause cancer:**
  Substrate is not listed.
- **Chemicals known to cause reproductive toxicity for females:**
  Substrate is not listed.
- **Chemicals known to cause reproductive toxicity for males:**
  Substrate is not listed.
- **Chemicals known to cause developmental toxicity:**
  Substrate is not listed.

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

### Hazard statements
- **H227** Combustible liquid.
- **H302** Harmful if swallowed.
- **H315** Causes skin 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.
- **P301+P312** If swallowed: Call a poison center/doctor if you feel unwell.
- **P330** Rinse mouth.
- **P403+P235** Store in a well-ventilated place. Keep cool.
- **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
  - product safety@adv-bio.com
- **Date of preparation / last revision** 06/17/2019 / -
- **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)
  - 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. 4: Flammable liquids – Category 4
  - Acute Tox. 4: Acute toxicity – Category 4
  - Skin Irrit. 2: Skin corrosion/irritation – Category 2