1 Identification

- Product identifier
- Trade name: Maple Furanone 1% EtOH-OC natural
- Product number: 1568
- 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
  sarfa@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
  - GHS02 Flame
    Flam. Liq. 2 H225 Highly flammable liquid and vapor.
  - GHS08 Health hazard
    Carc. 1A H350 May cause cancer.

- 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
  - GHS08

- Signal word: Danger
- Hazard-determining components of labeling:
  - ethanol
- Hazard statements
  - H225 Highly flammable liquid and vapor.
  - H350 May cause cancer.
- Precautionary statements
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
### 3 Composition/information on ingredients

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

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td>698-10-2</td>
<td>Acute Tox. 4, H302</td>
</tr>
</tbody>
</table>

### 4 First-aid measures

- **Description of first aid measures**
- **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 or extinguishing powder. Fight larger fires with alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet

(Continued on page 3)
Trade name: Maple Furanone 1% EtOH-OC natural

- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters: No special measures required.
- Protective equipment: 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: Prevent seepage into sewage system, workpits and cellars.
- Methods and material for containment and cleaning up: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). 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.

7 Handling and storage

- Handling: No special precautions are necessary if used correctly.
- Precautions for safe handling: Keep ignition sources away - Do not smoke. Protect against electrostatic charges.
- Information about protection against explosions and fires: See Section 7 for information on safe handling.
- Conditions for safe storage, including any incompatibilities: Store in a cool location.
- Storage: Not required.
- 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: The lists that were valid during the creation were used as a basis.

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td>Long-term value: 1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>Long-term value: 1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 1880 mg/m³, 1000 ppm</td>
</tr>
</tbody>
</table>

(Continued on page 4)
Exposure controls

Personal protective equipment:

General protective and hygienic measures: Wash hands before breaks and at the end of work.

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. 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: Colorless to pale yellow

Odor: Alcoholic maple

Odour threshold: Not determined.

pH-value: Not determined.

Change in condition

Melting point/Melting range: -114.5 °C (-174 °F)

Boiling point/Boiling range: 78 °C (172 °F)

Flash point: 17 °C (63 °F)

Flammability (solid, gaseous): Not applicable.

Ignition temperature: 425 °C (797 °F)

Decomposition temperature: Not determined.

Auto igniting: Product is not selfigniting.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
Trade name: Maple Furanone 1% EtOH-OC natural

<table>
<thead>
<tr>
<th>· Explosion limits:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower:</td>
<td>3.5 Vol %</td>
</tr>
<tr>
<td>Upper:</td>
<td>15 Vol %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Vapor pressure at 20 °C (68 °F):</th>
<th>59 hPa (44 mm Hg)</th>
</tr>
</thead>
</table>

| · Density at 20 °C (68 °F):     | 0.812 g/cm³ (6.776 lbs/gal) |
| Relative density               | Not determined. |
| Vapour density                 | Not determined. |
| Evaporation rate               | Not determined. |

<table>
<thead>
<tr>
<th>· Solubility in / Miscibility with Water at 20 °C (68 °F):</th>
<th>1 g/l</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>· Viscosity:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not determined.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Solvent content:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic solvents:</td>
<td>99.0 %</td>
</tr>
<tr>
<td>VOC content:</td>
<td>99.0 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Other information</th>
<th>No further relevant information available.</th>
</tr>
</thead>
</table>

10 Stability and reactivity

<table>
<thead>
<tr>
<th>· Reactivity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td></td>
</tr>
<tr>
<td>Thermal decomposition / conditions to be avoided:</td>
<td></td>
</tr>
<tr>
<td>No decomposition if used according to specifications.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Possibility of hazardous reactions</th>
<th>No dangerous reactions known.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>· Conditions to avoid</th>
<th>No further relevant information available.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>· Incompatible materials:</th>
<th>No further relevant information available.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>· Hazardous decomposition products:</th>
<th>No dangerous decomposition products known.</th>
</tr>
</thead>
</table>

11 Toxicological information

<table>
<thead>
<tr>
<th>· Information on toxicological effects</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity:</td>
<td></td>
</tr>
<tr>
<td>Primary irritant effect:</td>
<td></td>
</tr>
<tr>
<td>on the skin: No irritant effect.</td>
<td></td>
</tr>
<tr>
<td>on the eye: No irritating effect.</td>
<td></td>
</tr>
<tr>
<td>Sensitization: No sensitizing effects known.</td>
<td></td>
</tr>
<tr>
<td>Additional toxicological information:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Carcinogenic categories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC (International Agency for Research on Cancer)</td>
<td></td>
</tr>
<tr>
<td>64-17-5 ethanol</td>
<td></td>
</tr>
</tbody>
</table>
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: Generally not hazardous for water.
- 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: 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, ADR, IMDG, IATA: 3 Flammable liquids
  - Class: II
Trade name: Maple Furanone 1% EtOH-OC natural

- Environmental hazards: No
- Marine pollutant: No
- Special precautions for user: Warning: Flammable liquids
- 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: 5 L
  - On cargo aircraft only: 60 L
  - ADR
  - Excepted quantities (EQ): Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
  - IMDG
  - Limited quantities (LQ): 1L
  - Excepted quantities (EQ): Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
- UN "Model Regulation": UN1170, Ethanol solutions, 3, II

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.
- 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:
    - 64-17-5 ethanol
Trade name: Maple Furanone 1% EtOH-OC natural

- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    None of the ingredients is listed.
  - TLV (Threshold Limit Value established by ACGIH)
    64-17-5 ethanol A3
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    None of the ingredients is listed.
- GHS label elements
  - The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms
    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.
    
    GHS02  GHS08

- Signal word Danger
- Hazard-determining components of labeling: ethanol
- Hazard statements
  - H225 Highly flammable liquid and vapor.
  - H350 May cause cancer.
- Precautionary statements
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
  - P280 Wear protective gloves / eye protection / face protection.
  - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P405 Store locked up.
  - 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.

- Relevant phrases
  - H225 Highly flammable liquid and vapor.
  - H302 Harmful if swallowed.
  - H304 May be fatal if swallowed.
- Department issuing SDS: Product safety department
- Contact: Sidney Arfa
- Date of preparation / last revision 06/25/2015 / -
- 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
<table>
<thead>
<tr>
<th><strong>Trade name</strong>: Maple Furanone 1% EtOH-OC natural</th>
</tr>
</thead>
<tbody>
<tr>
<td>IATA: International Air Transport Association</td>
</tr>
<tr>
<td>ACGIH: American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>EINECS: European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS: European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>CAS: Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>NFPA: National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS: Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC: Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>Flam. Liq. 2: Flammable liquids, Hazard Category 2</td>
</tr>
<tr>
<td>Acute Tox. 4: Acute toxicity, Hazard Category 4</td>
</tr>
<tr>
<td>Carc. 1A: Carcinogenicity, Hazard Category 1A</td>
</tr>
</tbody>
</table>

(Continuation of page 8)