1 Identification

- Product identifier
- Trade name: Octanal 50% in Orange Oil natural
- Product number: 1043
- 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
  - GHS02 Flame
    Flam. Liq. 3 H226 Flammable liquid and vapor.
  - GHS08 Health hazard
    Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.
  - GHS07
    Skin Irrit. 2 H315 Causes skin irritation.
    Eye Irrit. 2A H319 Causes serious eye 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.

(Continued on page 2)
The product is classified and labeled according to the Globally Harmonized System (GHS).

**Hazard pictograms**

- GHS02
- GHS07
- GHS08

**Signal word** Danger

**Hazard-determining components of labeling:**
Orange Oil

**Hazard statements**
- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H317 May cause an allergic skin reaction.
- H304 May be fatal if swallowed and enters airways.

**Precautionary statements**
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P301+P310 If swallowed: Immediately call a poison center/doctor.
- P321 Specific treatment (see on this label).
- P331 Do NOT induce vomiting.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P405 Store locked up.
- 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: Health = 2
  - FIRE: Fire = 2
  - REACTIVITY: 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.
Trade name: Octanal 50% in Orange Oil 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. If symptoms persist, consult a doctor.
- 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.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- 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.
Trade name: Octanal 50% in Orange Oil 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:
    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:
    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:
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· 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:
    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

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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: 171 °C (339.8 °F)
- Flash point: 52 °C (125.6 °F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 210 °C (410 °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.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Octanal 50% in Orange Oil natural

· Explosion limits:
  Lower: Not determined.
  Upper: Not determined.

· Vapor pressure: Not determined.

· Density at 20 °C (68 °F):
  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.

· Solvent content:
  VOC content: 0.00 %

· Other information
  0.0 g/l / 0.00 lb/gal

No further relevant information available.

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:

  CAS: 124-13-0 octanal
  Oral LD50: 5,630 mg/kg (rat)
  Dermal LD50: 6,350 mg/kg (rabbit)

· Primary irritant effect:
  on the skin: No irritant effect.
  on the eye: 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:

(Continued on page 7)
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 3 (Self-assessment): extremely hazardous for water.
    Do not allow product to reach ground water, water course or sewage system, even in small quantities.
    Danger to drinking water if even extremely 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: UN1993

· UN proper shipping name
  · DOT
    Flammable liquids, n.o.s. (Orange Oil, Octyl aldehydes)
  · ADR
    1993 FLAMMABLE LIQUID, N.O.S. (Orange Oil, OCTYL ALDEHYDES), ENVIRONMENTALLY HAZARDOUS
**Trade name:** Octanal 50% in Orange Oil natural

<table>
<thead>
<tr>
<th>IMDG</th>
<th>FLAMMABLE LIQUID, N.O.S. (Orange Oil, OCTYL ALDEHYDES), MARINE POLLUTANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IATA</td>
<td>FLAMMABLE LIQUID, N.O.S. (Orange Oil, OCTYL ALDEHYDES)</td>
</tr>
</tbody>
</table>

- **Transport hazard class(es)**
  - DOT, IMDG
    - Class 3 Flammable liquids
    - Label 3
  - ADR
    - Class 3 (M6) Flammable liquids
    - Label 3
  - IATA
    - Class 3 Flammable liquids
    - Label 3

- **Packing group**
  - DOT, ADR, IMDG, IATA III

- **Environmental hazards:**
  - Product contains environmentally hazardous substances: Orange Oil, octanal
  - Marine pollutant: Yes
  - Special marking (ADR):
    - Symbol (fish and tree)

- **Special precautions for user**
  - Warning: Flammable liquids
  - Danger code (Kemler): 90
  - EMS Number: F-E,S-E
  - 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: No limit
      - On cargo aircraft only: No limit
    - Remarks: Special marking with the symbol (fish and tree).
Safety Data Sheet
acc. to OSHA HCS

Printing date 02/11/2019 Reviewed on 02/08/2019

Trade name: Octanal 50% in Orange Oil natural

<table>
<thead>
<tr>
<th>ADR</th>
<th>Excepted quantities (EQ)</th>
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<tbody>
<tr>
<td>Code: E1</td>
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<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
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<tr>
<td>Maximum net quantity per outer packaging: 1000 ml</td>
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<table>
<thead>
<tr>
<th>IMDG</th>
<th>Limited quantities (LQ)</th>
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<tr>
<td>Code: E1</td>
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<tr>
<td>5L</td>
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</table>

<table>
<thead>
<tr>
<th>UN &quot;Model Regulation&quot;:</th>
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<tbody>
<tr>
<td>UN 1993 FLAMMABLE LIQUID, N.O.S. (ORANGE OIL, OCTYL ALDEHYDES), 3, III, ENVIRONMENTALLY HAZARDOUS</td>
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15 Regulatory information

<table>
<thead>
<tr>
<th>Safety, health and environmental regulations/legislation specific for the substance or mixture</th>
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<tbody>
<tr>
<td>Sara</td>
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<tr>
<th>Section 355 (extremely hazardous substances):</th>
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<tbody>
<tr>
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<thead>
<tr>
<th>Section 313 (Specific toxic chemical listings):</th>
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<tbody>
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<thead>
<tr>
<th>TSCA (Toxic Substances Control Act):</th>
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<tbody>
<tr>
<td>All ingredients are listed.</td>
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<thead>
<tr>
<th>Proposition 65</th>
</tr>
</thead>
</table>

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<tr>
<th>Chemicals known to cause cancer:</th>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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</table>

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<tr>
<th>Chemicals known to cause reproductive toxicity for females:</th>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for males:</th>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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</table>

<table>
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<tr>
<th>Chemicals known to cause developmental toxicity:</th>
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<tbody>
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<td>None of the ingredients is listed.</td>
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<thead>
<tr>
<th>Carcinogenic categories</th>
</tr>
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<thead>
<tr>
<th>EPA (Environmental Protection Agency)</th>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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<tr>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
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<tbody>
<tr>
<td>None of the ingredients is listed.</td>
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</table>

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<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
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<tbody>
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<td>None of the ingredients is listed.</td>
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<thead>
<tr>
<th>GHS label elements</th>
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</table>

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).
Trade name: Octanal 50% in Orange Oil natural

- **Hazard pictograms**
  - GHS02
  - GHS07
  - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - Orange Oil

- **Hazard statements**
  - H226 Flammable liquid and vapor.
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.
  - H317 May cause an allergic skin reaction.
  - H304 May be fatal if swallowed and enters airways.

- **Precautionary statements**
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P301+P310 If swallowed: Immediately call a poison center/doctor.
  - P321 Specific treatment (see on this label).
  - P311 Do NOT induce vomiting.
  - P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P362+P364 Take off contaminated clothing and wash it before reuse.
  - 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**
  - H226 Flammable liquid and vapor.
  - H304 May be fatal if swallowed and enters airways.
  - 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
  - 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

(Continued on page 11)
Trade name: Octanal 50% in Orange Oil natural

<table>
<thead>
<tr>
<th>(Continuation of page 10)</th>
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</table>

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  
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  
Asp. Tox. 1: Aspiration hazard – Category 1