# 1 Identification

- **Product identifier**
- **Trade name:** Furfural synthetic
- **Product number:** 2011
- **CAS Number:** 98-01-1
- **EC number:** 202-627-7
- **Index number:** 605-010-00-4
- **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

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# 2 Hazard(s) identification

### Classification of the substance or mixture

- **GHS02 Flame**
  Flam. Liq. 3 H226 Flammable liquid and vapor.

- **GHS06 Skull and crossbones**
  Acute Tox. 3 H301 Toxic if swallowed.
  Acute Tox. 3 H331 Toxic if inhaled.

(Continued on page 2)
Trade name: Furfural synthetic

- **GHS08 Health hazard**
  - Carc. 2  H351 Suspected of causing cancer.

- **GHS07**
  - Acute Tox. 4  H312 Harmful in contact with skin.
  - Skin Irrit. 2  H315 Causes skin irritation.
  - Eye Irrit. 2A  H319 Causes serious eye irritation.
  - STOT SE 3  H335 May cause respiratory irritation.

- **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).
- **Hazard pictograms**
  - GHS02
  - GHS06
  - GHS07
  - GHS08

- **Signal word** Danger
- **Hazard-determining components of labeling:**
  - 2-furaldehyde
- **Hazard statements**
  - H226 Flammable liquid and vapor.
  - H301+H331 Toxic if swallowed or if inhaled.
  - H312 Harmful in contact with skin.
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.
  - H351 Suspected of causing cancer.
  - H335 May cause respiratory irritation.

- **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).
  - P303 Rinse mouth.
  - 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.
Trade name: Furfural synthetic

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.
  Remove breathing apparatus only after contaminated clothing have been completely removed.
  In case of irregular breathing or respiratory arrest provide artificial respiration.
  - After inhalation:
  Supply fresh air or oxygen; call for 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:
    Do not induce vomiting; immediately call for medical help.

(Continued on page 4)
### 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:** Mouth respiratory protective device.
    - **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:** 2 ppm
    - **PAC-2:** 10 ppm
    - **PAC-3:** 100 ppm

(Continued on page 5)
7 Handling and storage

· Handling:
· Precautions for safe handling
  Ensure good ventilation/exhaustion at the workplace.
  Open and handle receptacle with care.
  Prevent formation of aerosols.
· Information about protection against explosions and fires:
  Keep ignition sources away - Do not smoke.
  Protect against electrostatic charges.
  Keep respiratory protective device available.
· Conditions for safe storage, including any incompatibilities
· Storage:
· Requirements to be met by storerooms and receptacles: No special 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

<table>
<thead>
<tr>
<th>Components with limit values that require monitoring at the workplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 98-01-1 2-furaldehyde</td>
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<tr>
<td>PEL</td>
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<tr>
<td>TLV</td>
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· Ingredients with biological limit values:

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<thead>
<tr>
<th>CAS: 98-01-1 2-furaldehyde</th>
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<td>BEI</td>
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· 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.
    Store protective clothing separately.
    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.

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.

Change in condition
Melting point/Melting range: -36 °C (-32.8 °F)
Boiling point/Boiling range: 162 °C (323.6 °F)

Flash point: 60 °C (140 °F)

Flammability (solid, gaseous): Not applicable.
Ignition temperature: 315 °C (599 °F)
Decomposition temperature: Not determined.
Auto igniting: Not determined.

Danger of explosion: Not determined.

Explosion limits:
- Lower: 2.1 Vol %
- Upper: 19.3 Vol %

Vapor pressure at 20 °C (68 °F): 1.5 hPa (1.1 mm Hg)

Density at 20 °C (68 °F): 1.16 g/cm³ (9.6802 lbs/gal)

Relative density: Not determined.

Vapor density: Not determined.

Evaporation rate: Not determined.

Solubility in / Miscibility with Water at 20 °C (68 °F): 83 g/l

Partition coefficient (n-octanol/water): Not determined.

Viscosity:
- Dynamic: Not determined.
- Kinematic: Not determined.

VOC content: 0.00 %

Other information: 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:

ATE (Acute Toxicity Estimate)

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>LC50/4 h</th>
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<tbody>
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<td>Oral</td>
<td>65 mg/kg (rat)</td>
<td>3 mg/l</td>
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<tr>
<td>Dermal</td>
<td>1,100 mg/kg</td>
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- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: Irritating effect.
- Sensitization: No sensitizing effects known.
- Additional toxicological information:
  - Carcinogenic categories
    - IARC (International Agency for Research on Cancer)
      - 3
    - 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.
- 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.

(Continued on page 9)
14 Transport information

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<td>· DOT, ADR, IMDG, IATA</td>
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<tr>
<td>· UN proper shipping name</td>
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<td>· DOT</td>
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<td>· ADR</td>
<td>1199 Furaldehydes</td>
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<td>· IMDG, IATA</td>
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<th>· Transport hazard class(es)</th>
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(Continued on page 10)
### Trade name: Furfural synthetic

| · Packing group | DOT, ADR, IMDG, IATA | II |
| · Environmental hazards: | Marine pollutant: | No |
| · Special precautions for user | | Warning: Toxic substances |
| · Danger code (Kemler): | 63 |
| · 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. |

#### 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): |
| | Substance is listed. |
| · Proposition 65 |
| · Chemicals known to cause cancer: |
| | Substance is not listed. |
Chemicals known to cause reproductive toxicity for females:
Substance is not listed.

Chemicals known to cause reproductive toxicity for males:
Substance is not listed.

Chemicals known to cause developmental toxicity:
Substance is not listed.

Carcinogenic categories

EPA (Environmental Protection Agency)
Substance is not listed.

TLV (Threshold Limit Value established by ACGIH)
A3

NIOSH-Ca (National Institute for Occupational Safety and Health)
Substance is not listed.

GHS label elements
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Hazard pictograms

ghs02 ghs06 ghs07 ghs08

Signal word Danger

Hazard-determining components of labeling:
2-furaldehyde

Hazard statements
H226 Flammable liquid and vapor.
H301+H331 Toxic if swallowed or if inhaled.
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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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Trade name: Furfural synthetic

(Continuation of page 11)

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.

Department issuing SDS: Product Safety Department  
Contact:  
Product Safety Department  
productsafety@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  
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  
BEI: Biological Exposure Limit  
Flam. Liq. 3: Flammable liquids – Category 3  
Acute Tox. 3: Acute toxicity – Category 3  
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  
Carc. 2: Carcinogenicity – Category 2  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3