### 1 Identification

- **Product identifier**
- **Trade name:** 2-Methyl-1-Butanol Mixed Isomers natural
  - **Product number:** 1580
  - **CAS Number:** 123-51-3/137-32-6
  - **EINECS Number:** 204-633-5/205-289-9
- **Application of the substance / the mixture** Flavored Ingredients

### 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:**
  - Infotrac: 1-800-535-5053 (Domestic) & 1-352-323-3500 (International)
  - Email: responders@infotrac.net & During normal business hours: 1-973-339-6242

### 2 Hazard(s) identification

- **Classification of the substance or mixture**

  - **GHS02 Flame**
  - **Flammable Liquids 3**
  - **H226 Flammable liquid and vapor.**

  - **GHS05 Corrosion**
  - **Eye Damage 1**
  - **H318 Causes serious eye damage.**

  - **GHS07**
  - **Skin Irritation 2**
  - **H315 Causes skin irritation.**

  - **H335 May cause respiratory irritation.**

**Specific Target Organ Toxicity - Single Exposure 3**

**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).
Trade name: 2-Methyl-1-Butanol Mixed Isomers natural

· Hazard pictograms

GHS02  GHS05  GHS07

· Signal word Danger

· Hazard-determining components of labeling:
  Isoamyl alcohol
  2-Methylbutanol

· Hazard statements
  H226 Flammable liquid and vapor.
  H315 Causes skin irritation.
  H318 Causes serious eye damage.
  H335 May cause respiratory irritation.

· Precautionary statements
  P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  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.
  P310 Immediately call a poison center/doctor.
  P321 Specific treatment (see on this label).
  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 = 3
    Fire = 2
    Reactivity = 0

  · HMIS-ratings (scale 0 - 4)
    HEALTH
    Health = *3
    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

· Chemical characterization: Mixtures

· Description: Mixture of the substances listed below with nonhazardous additions.
Trade name: 2-Methyl-1-Butanol Mixed Isomers natural

---

<table>
<thead>
<tr>
<th>Dangerous components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 123-51-3</td>
<td>Isoamyl alcohol</td>
</tr>
<tr>
<td>EINECS: 204-633-5</td>
<td></td>
</tr>
<tr>
<td>CAS: 137-32-6</td>
<td>2-Methylbutanol</td>
</tr>
<tr>
<td>EINECS: 205-289-9</td>
<td></td>
</tr>
</tbody>
</table>

58.0.1

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4 First-aid measures

- Description of first aid measures
  - General information: Immediately remove any clothing soiled by the product.
  - 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. Then 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).
  - Use neutralizing agent.
  - Dispose contaminated material as waste according to section 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:**
  - CAS: 123-51-3 Isoamyl alcohol
  - 125 ppm

- **PAC-2:**
  - CAS: 123-51-3 Isoamyl alcohol
  - 1700* ppm

- **PAC-3:**
  - CAS: 123-51-3 Isoamyl alcohol
  - 10000** ppm

### 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 the product specification and/or Certificate of Analysis 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.

### Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 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.

  **CAS: 123-51-3 Isoamyl alcohol**

<table>
<thead>
<tr>
<th>Value</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>360 mg/m³, 100 ppm primary and secondary</td>
</tr>
<tr>
<td>REL Long-term</td>
<td>450 mg/m³, 125 ppm primary and secondary</td>
</tr>
<tr>
<td>TLV Short-term</td>
<td>125 ppm</td>
</tr>
<tr>
<td>TLV Long-term</td>
<td>100 ppm</td>
</tr>
</tbody>
</table>

- **Additional information:** The lists that were valid during the creation were used as a basis.
58.0.1

· 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

---

## 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>· General Information</td>
</tr>
<tr>
<td>· Appearance:</td>
</tr>
<tr>
<td>· Form: Fluid</td>
</tr>
<tr>
<td>· Color: According to product specification</td>
</tr>
<tr>
<td>· Odor: According to product specification</td>
</tr>
<tr>
<td>· Odor threshold: Not determined.</td>
</tr>
<tr>
<td>· pH-value: Not determined.</td>
</tr>
<tr>
<td>· Change in condition</td>
</tr>
<tr>
<td>· Melting point/Melting range: Undetermined.</td>
</tr>
<tr>
<td>· Boiling point/Boiling range: 131 °C (267.8 °F)</td>
</tr>
</tbody>
</table>

(Continued on page 6)
### 58.0.1

- **Flash point:** 43 °C (109.4 °F)
- **Flammability (solid, gaseous):** Flammable.
- **Auto igniting:** 340 °C (644 °F)
- **Decomposition temperature:** Not determined.
- **Ignition temperature:** Product is not selfigniting.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- **Explosion limits:**
  - Lower: 1.2 Vol %
  - Upper: ~8 Vol %
- **Vapor pressure at 20 °C (68 °F):** 25 hPa (18.8 mm Hg)
- **Density at 20 °C (68 °F):** 0.81 g/cm³ (6.75945 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.
- **Solvent content:**
  - Organic solvents: 100.0 %
  - VOC content: 100.00 %
  - 810.0 g/l / 6.76 lb/gal
- **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:

<table>
<thead>
<tr>
<th>CAS: 123-51-3 Isoamyl alcohol</th>
<th>Oral</th>
<th>LD50 4,000 mg/kg (ATE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50 3,216 mg/kg (ATE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3,212 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 137-32-6 2-Methylbutanol</th>
<th>Oral</th>
<th>LD50 4,172 mg/kg (ATE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50 4,015 mg/kg (rat)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,889 mg/kg (ATE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3,540 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: Strong irritant with the danger of severe eye injury.
  - Sensitization: No sensitizing effects known.

- 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)
    - None of the ingredients is listed.
  - 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 1 (Self-assessment): slightly hazardous for water
      - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
      - Must not reach bodies of water or drainage ditch undiluted or unneutralized.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.

(Continued on page 8)
58.0.1 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

<table>
<thead>
<tr>
<th>Transport hazard class(es)</th>
<th>DOT Class</th>
<th>IMDG, IATA Class</th>
<th>UN Number</th>
<th>UN Proper shipping name</th>
<th>Special precautions for user (Kemler code)</th>
<th>Marine pollutant</th>
<th>Label</th>
<th>Stowage Category</th>
<th>Packing group A</th>
<th>Warning: Flammable liquids</th>
<th>Environmental hazards:</th>
<th>Packing group B</th>
<th>Class</th>
<th>DOT</th>
<th>IMDG, IATA</th>
<th>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</th>
<th>Not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Flammable liquids</td>
<td>3</td>
<td>3</td>
<td>UN1105</td>
<td>PENTANOLS</td>
<td>No</td>
<td>No</td>
<td>III</td>
<td>Not applicable.</td>
<td>A</td>
<td>No</td>
<td>No</td>
<td>B</td>
<td>F-E-S-D</td>
<td>30</td>
<td>F-E-S-D</td>
<td>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>3 Flammable liquids</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

(Continued on page 9)
Trade name: 2-Methyl-1-Butanol Mixed Isomers natural

- Transport/Additional information:
  - DOT
  - Quantity limitations
    - On passenger aircraft/rail: 60 L
    - On cargo aircraft only: 220 L
  - 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 1105 PENTANOLS, 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 components have the value ACTIVE.
  - Hazardous Air Pollutants
    - None of the ingredients is listed.
  - Proposition 65
    - None of the ingredients is listed.
  - 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:
    - None of the ingredients is listed.
  - Carcinogenic categories
    - EPA (Environmental Protection Agency)
      - None of the ingredients is listed.
    - TLV (Threshold Limit Value)
      - None of the ingredients is listed.
    - 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
- GHS05
- GHS07

**Signal word** Danger

**Hazard-determining components of labeling:**
- Isoamyl alcohol
- 2-Methylbutanol

**Hazard statements**
- H226 Flammable liquid and vapor.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.

**Precautionary statements**
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- 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.
- P310 Immediately call a poison center/doctor.
- P321 Specific treatment (see on this label).
- 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.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.

**Department issuing SDS:** Product Safety Department

**Contact:**
- Product Safety Department
- productsafety@adv-bio.com

**Date of preparation / last revision** 01/16/2024

**Abbreviations and acronyms:**
- ADR: Accord relatif au transport international 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
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
Trade name: 2-Methyl-1-Butanol Mixed Isomers natural

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose, 50 percent</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL</td>
<td>Recommended Exposure Limit</td>
</tr>
<tr>
<td>Flammable Liquids 3</td>
<td>Flammable liquids – Category 3</td>
</tr>
<tr>
<td>Skin Irritation 2</td>
<td>Skin corrosion/irritation – Category 2</td>
</tr>
<tr>
<td>Eye Damage 1</td>
<td>Serious eye damage/eye irritation – Category 1</td>
</tr>
<tr>
<td>Specific Target Organ Toxicity - Single Exposure 3</td>
<td>Specific target organ toxicity (single exposure) – Category 3</td>
</tr>
</tbody>
</table>