

## SAFETY DATA SHEET

According to JIS Z 7253:2019  
Revision date 09-Feb-2023  
Revision Number 2.03

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

|              |                                  |
|--------------|----------------------------------|
| Product Name | Methyl (R)-(-)-3-Hydroxybutyrate |
| Product Code | 132-07473,136-07471              |

|                                          |                                                                                                                                                       |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manufacturer                             | FUJIFILM Wako Pure Chemical Corporation<br>1-2 Doshomachi 3-Chome<br>Chuo-ku, Osaka 540-8605, Japan<br>Phone: +81-6-6203-3741<br>Fax: +81-6-6203-5964 |
| Supplier                                 | FUJIFILM Wako Pure Chemical Corporation<br>1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan<br>Phone: +81-6-6203-3741<br>Fax: +81-6-6203-2029   |
| Emergency telephone number               | +81-6-6203-3741 / +81-3-3270-8571                                                                                                                     |
| Recommended uses and restrictions on use | For research use only                                                                                                                                 |

## Section 2: HAZARDS IDENTIFICATION

## GHS classification

Classification of the substance or mixture

## Flammable liquids

Category 4

## Skin corrosion/irritation

Category 2

## Serious eye damage/eye irritation

Category 2A

## Specific target organ toxicity (single exposure)

Category 3

Category 3 Respiratory irritation

## Pictograms



## Signal word

Warning

## Hazard statements

- H227 - Combustible liquid
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation

## Precautionary statements-(Prevention)

- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection
- Avoid breathing dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- Keep cool

## Precautionary statements-(Response)

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing

- If eye irritation persists: Get medical advice/attention
- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation occurs: Get medical advice/attention
- Take off contaminated clothing and wash before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- Call a POISON CENTER or doctor/physician if you feel unwell
- In case of fire: Use CO<sub>2</sub>, dry chemical, or foam for extinction

**Precautionary statements-(Storage)**

- Store in a well-ventilated place. Keep container tightly closed
- Store locked up

**Precautionary statements-(Disposal)**

- Dispose of contents/container to an approved waste disposal plant

**Others**

**Other hazards** Not available

### Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Single Substance or Mixture** Substance

**Formula** C<sub>5</sub>H<sub>10</sub>O<sub>3</sub>

| Chemical Name                       | Weight-% | Molecular weight | ENCS     | ISHL No. | CAS RN    |
|-------------------------------------|----------|------------------|----------|----------|-----------|
| Methyl<br>(R)-(-)-3-Hydroxybutyrate | 97.0     | 118.13           | (2)-1430 | 公表       | 3976-69-0 |

**Note on ISHL No.:** \* in the table means announced chemical substances.

**Impurities and/or Additives:** Not applicable

### Section 4: FIRST AID MEASURES

**Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

**Skin contact**

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

**Eye contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

**Ingestion**

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

**Protection of first-aiders**

Use personal protective equipment as required.

### Section 5: FIRE FIGHTING MEASURES

**Suitable extinguishing media**

Water spray (fog), Carbon dioxide (CO<sub>2</sub>), Foam, Extinguishing powder, Sand

**Unsuitable extinguishing media**

No information available

**Specific hazards arising from the chemical product**

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

**Special extinguishing method**

No information available

**Special protective actions for fire-fighters**

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

## Section 6: ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

### Environmental precautions

To be careful not discharged to the environment without being properly handled waste water contaminated.

### Methods and materials for contaminant and methods and materials for cleaning up

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

### Recovery, neutralization

No information available

### Secondary disaster prevention measures

Clean contaminated objects and areas thoroughly observing environmental regulations.

## Section 7: HANDLING AND STORAGE

### Handling

#### Technical measures

Highly flammable. Avoid contact with high temperature objects, spark, and strong oxidizing agents. To cut with care and wear protective gloves and protective goggles to ampoule time of the opening (Cutting method to check the label). Use with local exhaust ventilation.

#### Precautions

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle In places other than those specified, should not be smoking or eating and drinking Should not be brought contaminated protective equipment and gloves to rest stops Deny unnecessary entry of non-emergency personnel to the handling area

#### Safety handling precautions

Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

### Storage

#### Safe storage conditions

##### Storage conditions

Keep container protect from light tightly closed. Store in a cool (2-10 °C) place.

##### Safe packaging material

Glass, Ampoule

#### Incompatible substances

Strong oxidizing agents

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering controls

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

### Exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### Personal protective equipment

#### Respiratory protection

Protective mask

#### Hand protection

Protective gloves

#### Eye protection

protective eyeglasses or chemical safety goggles

#### Skin and body protection

Long-sleeved work clothes

### General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

|                                                        |                                           |
|--------------------------------------------------------|-------------------------------------------|
| <b>Form</b>                                            |                                           |
| Color                                                  | Colorless - slightly yellow               |
| Turbidity                                              | clear                                     |
| Appearance                                             | liquid                                    |
| Odor                                                   | no data available                         |
| Melting point/freezing point                           | no data available                         |
| Boiling point, initial boiling point and boiling range | no data available                         |
| Flammability                                           | Combustible liquid                        |
| Evaporation rate:                                      | no data available                         |
| Flammability (solid, gas):                             | no data available                         |
| Upper/lower flammability or explosive limits           |                                           |
| Upper:                                                 | no data available                         |
| Lower:                                                 | no data available                         |
| Flash point                                            | no data available                         |
| Auto-ignition temperature:                             | no data available                         |
| Decomposition temperature:                             | no data available                         |
| pH                                                     | no data available                         |
| Viscosity (coefficient of viscosity)                   | no data available                         |
| Dynamic viscosity                                      | no data available                         |
| Solubilities                                           | water , Ethanol , acetone : Very soluble. |
| n-Octanol/water partition coefficient:(log Pow)        | no data available                         |
| Vapour pressure                                        | no data available                         |
| Specific Gravity / Relative density                    | 1.056 - 1.061 g/mL                        |
| Vapour density                                         | no data available                         |
| Particle characteristics                               | no data available                         |

## Section 10: STABILITY AND REACTIVITY

### Stability

|                                                                                                 |                          |
|-------------------------------------------------------------------------------------------------|--------------------------|
| Reactivity                                                                                      | no data available        |
| Chemical stability                                                                              | May be altered by light. |
| <b>Hazardous reactions</b>                                                                      |                          |
| None under normal processing                                                                    |                          |
| <b>Conditions to avoid</b>                                                                      |                          |
| Extremes of temperature and direct sunlight, Heat, flames and sparks, static electricity, spark |                          |
| <b>Incompatible materials</b>                                                                   |                          |
| Strong oxidizing agents                                                                         |                          |
| <b>Hazardous decomposition products</b>                                                         |                          |
| Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> )                                         |                          |

## Section 11: TOXICOLOGICAL INFORMATION

|                                          |                   |
|------------------------------------------|-------------------|
| <b>Acute toxicity</b>                    | no data available |
| <b>Skin irritation/corrosion</b>         | no data available |
| <b>Serious eye damage/ irritation</b>    | no data available |
| <b>Respiratory or skin sensitization</b> | no data available |
| <b>Reproductive cell mutagenicity</b>    | no data available |
| <b>Carcinogenicity</b>                   | no data available |
| <b>Reproductive toxicity</b>             | no data available |
| <b>STOT-single exposure</b>              | no data available |
| <b>STOT-repeated exposure</b>            | no data available |
| <b>Aspiration hazard</b>                 | no data available |

## Section 12: ECOLOGICAL INFORMATION

|                               |                          |
|-------------------------------|--------------------------|
| Ecotoxicity                   | No information available |
| Other data                    | no data available        |
| Persistence and degradability | No information available |
| Bioaccumulative potential     | No information available |
| Mobility in soil              | No information available |
| Hazard to the ozone layer     | No information available |

## Section 13: DISPOSAL CONSIDERATIONS

### Waste from residues

Disposal should be in accordance with applicable regional, national and local laws and regulations.

### Contaminated container and contaminated packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

## Section 14: TRANSPORT INFORMATION

|                                                                          |                          |
|--------------------------------------------------------------------------|--------------------------|
| ADR/RID                                                                  | Not regulated            |
| UN number                                                                | -                        |
| Proper shipping name:                                                    |                          |
| UN classification                                                        |                          |
| Subsidiary hazard class                                                  |                          |
| Packing group                                                            |                          |
| Marine pollutant                                                         | Not applicable           |
| IMDG                                                                     | Not regulated            |
| UN number                                                                | -                        |
| Proper shipping name:                                                    |                          |
| UN classification                                                        |                          |
| Subsidiary hazard class                                                  |                          |
| Packing group                                                            |                          |
| Marine pollutant (Sea)                                                   | Not applicable           |
| Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | No information available |
| IATA                                                                     | Not regulated            |
| UN number                                                                | -                        |
| Proper shipping name:                                                    |                          |
| UN classification                                                        |                          |
| Subsidiary hazard class                                                  |                          |
| Packing group                                                            |                          |
| Environmentally Hazardous Substance                                      | Not applicable           |

## Section 15: REGULATORY INFORMATION

### International Inventories

|               |        |
|---------------|--------|
| EINECS/ELINCS | Listed |
| TSCA          | -      |

### Japanese regulations

|                                                  |                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------|
| Fire Service Act                                 | Category IV, Class III petroleum, dangerous grade 3 water-soluble |
| Poisonous and Deleterious Substances Control Law | Not applicable                                                    |
| Industrial Safety and Health Act                 | Not applicable                                                    |

|                                                                     |                       |
|---------------------------------------------------------------------|-----------------------|
| Regulations for the carriage and storage of dangerous goods in ship | Not applicable        |
| Civil Aeronautics Law                                               | Not applicable        |
| Pollutant Release and Transfer Register Law (~2023.3.31)            | Not applicable        |
| <u>Pollutant Release and Transfer Register Law (2023/4/1~)</u>      | <u>Not applicable</u> |
| Export Trade Control Order                                          | Not applicable        |

## Section 16: OTHER INFORMATION

### Key literature references and sources for data etc.

NITE: National Institute of Technology and Evaluation (JAPAN)  
<http://www.safe.nite.go.jp/japan/db.html>  
IATA dangerous Goods Regulations  
RTECS:Registry of Toxic Effects of Chemical Substances  
Japan Industrial Safety and Health Association GHS Model SDS  
Dictionary of Synthetic Organic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.  
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.  
etc

### Disclaimer

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z7252(2019). \*JIS: Japanese Industrial Standards

**End of Safety Data Sheet**