



CERTIFICATE OF ANALYSIS

Product Name Lactic Acid
Batch No. 4440603
Expiry Date July 2024

| Characteristic | Unit | Lower Limit | Upper Limit | Value |
|----------------|--------|-------------|-------------|-------|
| Color fresh | APHA | | 100 | 33 |
| Assay | %(w/w) | 79.5 | 80.5 | 80.0 |

Parameters not tested in all batches but validated through in-process or final testing.

| Characteristic | Unit | Lower Limit | Upper Limit |
|---------------------------------------|--------|------------------------------|-------------|
| Stereochemical purity (S)- enantiomer | % | 95 | |
| Sulfated ash | %(w/w) | | 0.1 |
| Solubility | | Soluble in water and ethanol | |
| Positive test for lactate | | Passes test | |
| Density (20°C) | g/ml | 1.18 | 1.20 |
| Heavy metals | mg/kg | | 10 |
| Iron | mg/kg | | 10 |
| Lead | mg/kg | | 0.5 |
| Arsenic | mg/kg | | 1 |
| Calcium | mg/kg | | 20 |
| Mercury | mg/kg | | 1 |
| Cyanide | mg/kg | | 5 |
| Chloride | mg/kg | | 10 |
| Sulfate | mg/kg | | 20 |
| Citrate, Oxalate, Phosphate, Tartrate | | Passes test | |
| Sugars | | Passes test | |



January 05, 2021

To whom it may concern:

Herewith we, declare that:

for the product produced at manufacturing location Gorinchem, the Netherlands with the names Lactic Acid the following information regarding allergen is applicable:

| Allergenic foods and derivatives | Allergens intentionally present on the production line? | | Allergens intentionally present on other production line in same plant? | | Cross contamination possible? | | |
|---|---|-------------------------------------|---|-------------------------------------|-------------------------------|-------------------------------------|-------------------------------------|
| | Annex II Regulation (EC) No 2011/1169 | YES | NO | YES | NO | YES | NO |
| Cereals containing gluten | | | | | | | |
| Wheat | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Rye | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Barley | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Oats | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Spelt | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Kamut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Hybridised strains | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Crustaceans | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Eggs | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Fish | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Peanuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Soybeans | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Milk (inc. lactose) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (Tree) Nuts | | | | | | | |
| Almond | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Hazelnut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Walnuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cashews | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Pecan nuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Brazil nuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Pistachio nuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Macadamia nuts and Queensland nuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Celery | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mustard | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Sesame seeds | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Sulphur dioxide and sulphites (E220 – E228) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |



| Allergenic foods and derivatives | Allergens intentionally present on the production line? | | Allergens intentionally present on other production line in same plant? | | Cross contamination possible? | |
|---|---|-------------------------------------|---|-------------------------------------|-------------------------------|-------------------------------------|
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Lupin | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Molluscs | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| LeDa (formely known as ALBA) | YES | NO | YES | NO | YES | NO |
| Lactose | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cocoa | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Glutamate (E620-E625) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Chicken meat | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Coriander | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Corn/ maize | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Legumes | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Beef | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Pork | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Carrot | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Other legislation/ miscellaneous | YES | NO | YES | NO | YES | NO |
| Buckwheat | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Other Nuts | | | | | | |
| Pine nuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Coconut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Chestnuts | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Hickory nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Chinquapin | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Butternut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Ginko nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Lichee nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Pili nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Shea nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Beech nut | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Matsutake mushroom | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Yam | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Gelatin | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Sunflower seed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Poppy seed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cotton seed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Azo dyes : Sunset yellow (E 110), Quinoline yellow (E 104), Carmoisine (E 122), Allura red (E 129), Tartrazine (E 102) , Ponceau 4R (E 124) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Latex | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Fruit | | | | | | |
| Kiwi | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Banana | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Peach | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Apple | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Orange | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mango | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Tomato | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



GMO DECLARATION

Lactic Acid

Our company supplies the above ingredient to your company.

We declare that this product:

- **Does not consist and does not contain Genetically Modified Organisms.**
- **Is not produced from and does not contain ingredients produced from Genetically Modified Organisms.**

04/08/2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
 Name : Lactic acid

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Food additive
 Speciality chemical
 See annex for more detailed information.

1.2.2. Uses advised against:

Restrictions on use : No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

Madar Corporation Limited

19-20 Sandheath Industrial Estate

Fordingbridge

SP6 1PA

T +44 0 1425 655 555

technical@madarcorporation.co.uk

| Emergency number Country | Organisation/Company | Address | Emergency number | Comment |
|--------------------------|--|--|--|---------|
| Ireland | National Poisons Information Centre Beaumont Hospital | PO Box 1297 Beaumont Road 9 Dublin | +353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7) | |
| United Kingdom | National Health Service (NHS) | | 111 999 (in life-threatening emergencies) | |
| Wales | National Health Service (NHS) | | 0845 46 47 | |

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315

Serious eye damage/eye irritation, Category 1 H318

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Harmful if swallowed. Causes skin irritation. Causes serious eye damage.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS05

Signal word (CLP)

Danger

Contains

S-lactic acid

Hazard statements (CLP)

H315 - Causes skin irritation.

H318 - Causes serious eye damage.

Precautionary statements (CLP)

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 - IF ON SKIN: Wash with plenty of water.

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 or doctor.

P362 - Take off contaminated clothing.

2.3. Other hazards

Other hazards which do not result in classification : No additional information.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

| Component | |
|-------------------------|---|
| S-lactic acid (79-33-4) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | Conc. (% w/w) | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|---------------|--|---------------|---|
| S-lactic acid | (CAS-No.) 79-33-4 (EC-No.) 201-196-2 (EC Index-No.) 607-743-00-5 (REACH-no) 01-2119474164-39, x | ≥ 50 | Skin Irrit. 2, H315 Eye Dam. 1, H318 |

| Specific concentration limits: | | |
|--------------------------------|--|--|
| Name | Product identifier | Specific concentration limits |
| S-lactic acid | (CAS-No.) 79-33-4 (EC-No.) 201-196-2 (EC Index-No.) 607-743-00-5 (REACH-no) 01-2119474164-39, x | (1 ≤C < 3) Eye Irrit. 2, H319 (3 ≤C < 100) Eye Dam. 1, H318 (10 ≤C < 100) Skin Irrit. 2, H315 |

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures general | : Call a poison center or a doctor if you feel unwell. Wash contaminated clothing before reuse. |
| First-aid measures after inhalation | : Remove person to fresh air and keep comfortable for breathing. |
| First-aid measures after skin contact | : Wash skin with plenty of water. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention. |
| First-aid measures after eye contact | : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately. |
| First-aid measures after ingestion | : Rinse mouth. Call a poison center or a doctor if you feel unwell. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|-------------------------------------|--|
| Symptoms/effects after skin contact | : Irritation. irritation (itching, redness, blistering). |
| Symptoms/effects after eye contact | : Serious damage to eyes. Redness, pain. Burns. |
| Symptoms/effects after ingestion | : May be harmful if swallowed. |

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. If breathing is difficult, give oxygen. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|--------------------------------|--|
| Suitable extinguishing media | : Water spray. Dry powder. Foam. Carbon dioxide. |
| Unsuitable extinguishing media | : Do not use a solid water stream as it may scatter and spread fire. |

5.2. Special hazards arising from the substance or mixture

| | |
|--|--|
| Fire hazard | : No fire hazard. |
| Explosion hazard | : No direct explosion hazard. |
| Hazardous decomposition products in case of fire | : Under fire conditions, hazardous fumes will be present: Carbon monoxide, Carbon dioxide. |

5.3. Advice for firefighters

| | |
|--------------------------------|--|
| Firefighting instructions | : Evacuate personnel to a safe area. Move containers from fire area if it can be done without personal risk. Use water spray or fog for cooling exposed containers. Prevent fire fighting water from entering the environment. |
| Protection during firefighting | : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

| | |
|---|--|
| General measures | : No additional information. |
| 6.1.1. For non-emergency personnel | |
| Protective equipment | : Wear recommended personal protective equipment. |
| Emergency procedures | : Evacuate unnecessary personnel. Ventilate spillage area. Do not touch or walk on the spilled product. Avoid breathing vapours, mist. Avoid contact with skin and eyes. |
| 6.1.2. For emergency responders | |
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

| | |
|-------------------------|---|
| For containment | : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak if safe to do so. |
| Methods for cleaning up | : Large amounts: Cover spill with non combustible material, e.g.: sand, earth, vermiculite. Shovel or sweep up and put in a closed container for disposal. Flush contaminated areas with plenty of water. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. After cleaning, flush traces away with water. Notify authorities if product enters sewers or public waters. Never return spills in original containers for possible later re-use. |
| Other information | : Dispose of materials or solid residues at an authorized site. |

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

| | |
|-------------------------------|--|
| Precautions for safe handling | : Handle in accordance with good industrial hygiene and safety procedures. Wear personal protective equipment. Ensure good ventilation of the work station. Avoid breathing vapours, mist. Avoid contact with skin and eyes. |
| Hygiene measures | : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. |

7.2. Conditions for safe storage, including any incompatibilities

| | |
|------------------------|---|
| Storage conditions | : Keep container tightly closed in a cool, well-ventilated place. |
| Incompatible materials | : Strong oxidizing agents. |
| Storage area | : Store according to local legislation. |

7.3. Specific end use(s)

Annex.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Do not expose to temperatures above 200 °C / 392 °F.

8.2.2. Personal protection equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

| Eye protection: | | | |
|---|----------------------|-----------------|----------|
| Chemical goggles or face shield. Safety glasses | | | |
| Type | Field of application | Characteristics | Standard |
| Safety goggles | Droplet, Aerosols | | EN 166 |
| Face shield | Droplet, Aerosols | | EN 166 |

8.2.2.2. Skin protection

| Skin and body protection: | |
|---|----------|
| Wear suitable protective clothing | |
| Type | Standard |
| acid-resistant protective clothing, Boots | EN 13034 |

| Hand protection: | | | | | |
|-------------------------|--------------|-------------------|----------------|-------------|----------|
| Protective gloves | | | | | |
| Type | Material | Permeation | Thickness (mm) | Penetration | Standard |
| Protective gloves | Butyl rubber | 6 (> 480 minutes) | 0.5 | | EN 374 |

8.2.2.3. Respiratory protection

| Respiratory protection: | | | |
|---|--|---------------------------|----------|
| Where exposure through inhalation may occur from use, respiratory protection equipment is recommended | | | |
| Device | Filter type | Condition | Standard |
| Half-face mask (DIN EN 140) | Type A - High-boiling (>65 °C) organic compounds | Aerosols, Droplet, Vapour | EN 140 |

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|--------------------------|
| Physical state | : Liquid |
| Colour | : Colourless, yellowish. |
| Appearance | : clear. |
| Odour | : characteristic. |
| Odour threshold | : Not available |
| Melting point | : Not applicable |
| Freezing point | : Not available |
| Boiling point | : 120 – 130 °C |
| Flammability | : Not applicable |
| Explosive limits | : Not available |
| Lower explosive limit (LEL) | : Not available |
| Upper explosive limit (UEL) | : Not available |
| Flash point | : Not available |
| Auto-ignition temperature | : > 400 °C 93% w/w |
| Decomposition temperature | : > 200 °C |
| pH | : < 1.2 (25°C) |
| Viscosity, kinematic | : Not available |
| Viscosity, dynamic | : 5 – 60 mPa·s (25°C) |
| Solubility | : Miscible with water. |
| Partition coefficient n-octanol/water (Log Kow) | : Not available |
| Partition coefficient n-octanol/water (Log Pow) | : -0.62 |
| Vapour pressure | : Not available |
| Vapour pressure at 50 °C | : Not available |
| Density | : 1.2 g/cm ³ |
| Relative density | : Not available |
| Relative vapour density at 20 °C | : Not available |
| Particle size | : Not applicable |

| | |
|--------------------------------|------------------|
| Particle size distribution | : Not applicable |
| Particle shape | : Not applicable |
| Particle aspect ratio | : Not applicable |
| Particle aggregation state | : Not applicable |
| Particle agglomeration state | : Not applicable |
| Particle specific surface area | : Not applicable |
| Particle dustiness | : Not applicable |

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Surface tension : 44 - 50 mN/m @50 - 90%

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Do not expose to temperatures above 200 °C / 392 °F.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

| | |
|-----------------------------|------------------|
| Acute toxicity (oral) | : Not classified |
| Acute toxicity (dermal) | : Not classified |
| Acute toxicity (inhalation) | : Not classified |

| S-lactic acid (79-33-4) | |
|-----------------------------------|---|
| LD50 oral rat | 3543 mg/kg bodyweight (EPA OPP 81-1 method) |
| LD50 dermal rabbit | > 2000 mg/kg bodyweight (EPA OPP 81-2 method) |
| LC50 Inhalation - Rat (Dust/Mist) | > 7.94 mg/l/4h (OECD 403 method) |

| | |
|-------------------------------|--|
| Skin corrosion/irritation | : Causes skin irritation. pH: < 1.2 (25°C) |
| Serious eye damage/irritation | : Causes serious eye damage. pH: < 1.2 (25°C) |

Respiratory or skin sensitisation : Not classified
 Germ cell mutagenicity : Not classified
 Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

11.2.2 Other information

Potential adverse human health effects and symptoms : Causes serious eye damage, Redness, pain, Burns, Causes skin irritation, irritation (itching, redness, blistering)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
 Hazardous to the aquatic environment, short-term (acute) : Not classified
 Hazardous to the aquatic environment, long-term (chronic) : Not classified

| S-lactic acid (79-33-4) | |
|--------------------------------|----------------|
| LC50 - Fish [1] | 130 – 320 mg/l |
| EC50 - Crustacea [1] | 320 – 750 mg/l |
| ErC50 algae | 3500 mg/l |
| NOEC chronic algae | 1900 mg/l |

12.2. Persistence and degradability

| L-lactic acid | |
|-------------------------------|------------------------|
| Persistence and degradability | Readily biodegradable. |

| S-lactic acid (79-33-4) | |
|--------------------------------|------------------------|
| Persistence and degradability | Readily biodegradable. |

12.3. Bioaccumulative potential

| L-lactic acid | |
|---|---------------------------|
| Partition coefficient n-octanol/water (Log Pow) | -0.62 |
| Bioaccumulative potential | Bioaccumulation unlikely. |

| | |
|---|-------------------------|
| S-lactic acid (79-33-4) | |
| Partition coefficient n-octanol/water (Log Pow) | -0.54 (OECD 107 method) |

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

| |
|--|
| L-lactic acid |
| This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII |
| This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

| |
|---|
| Component |
| S-lactic acid (79-33-4) |
| This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
- Sewage disposal recommendations : Disposal must be done according to official regulations.
- Product/Packaging disposal recommendations : Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

| ADR | IMDG | IATA | ADN | RID |
|---|---------------|---------------|---------------|---------------|
| 14.1. UN number or ID number | | | | |
| Not regulated | Not regulated | Not regulated | Not regulated | Not regulated |
| 14.2. UN proper shipping name | | | | |
| Not regulated | Not regulated | Not regulated | Not regulated | Not regulated |
| 14.3. Transport hazard class(es) | | | | |
| Not regulated | Not regulated | Not regulated | Not regulated | Not regulated |
| 14.4. Packing group | | | | |
| Not regulated | Not regulated | Not regulated | Not regulated | Not regulated |
| 14.5. Environmental hazards | | | | |
| Not regulated | Not regulated | Not regulated | Not regulated | Not regulated |
| No supplementary information available | | | | |

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

| The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006: | | |
|--|-------------------------------|---|
| Reference code | Applicable on | Entry title or description |
| 3(b) | L-lactic acid ; S-lactic acid | Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10 |

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

| |
|---|
| Indication of changes: |
| Trade name. Full Layout. Exposure controls/personal protection. |

| | |
|------------------------------------|---|
| Abbreviations and acronyms: | |
| ADN | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| ATE | Acute Toxicity Estimate |

| | |
|---------|--|
| BCF | Bioconcentration factor |
| BLV | Biological limit value |
| BOD | Biochemical oxygen demand (BOD) |
| COD | Chemical oxygen demand (COD) |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |
| EC-No. | European Community number |
| EC50 | Median effective concentration |
| EN | European Standard |
| IARC | International Agency for Research on Cancer |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| NOAEC | No-Observed Adverse Effect Concentration |
| NOAEL | No-Observed Adverse Effect Level |
| NOEC | No-Observed Effect Concentration |
| OECD | Organisation for Economic Co-operation and Development |
| OEL | Occupational Exposure Limit |
| PBT | Persistent Bioaccumulative Toxic |
| PNEC | Predicted No-Effect Concentration |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| SDS | Safety Data Sheet |
| STP | Sewage treatment plant |
| ThOD | Theoretical oxygen demand (ThOD) |
| TLM | Median Tolerance Limit |
| VOC | Volatile Organic Compounds |
| CAS-No. | Chemical Abstract Service number |
| N.O.S. | Not Otherwise Specified |
| vPvB | Very Persistent and Very Bioaccumulative |
| ED | Endocrine disrupting properties |

Training advice : Training staff on good practice.

| | |
|--|---|
| Full text of H- and EUH-statements: | |
| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |

| | |
|---------------|---|
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |

Corbion SDS EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Lactic Acid

| | | |
|---------------------------------------|--|--|
| Description | Natural Lactic acid, which is produced by fermentation from carbohydrates. It can be used in many applications in food and non food areas. | |
| Assay | Assay Stereochemical purity (Corbion method) | 79.5-80.5 % (w/w) min. 95% (% (S)-enantiomer) |
| Visual sensory characteristics | Color fresh | max. 100 Apha |
| Identification | Solubility Positive for lactate Relative density 20 °C | miscible with water passes test 1.18-1.20 g/ml |
| Purity | Sulfated ash / residue on ignition Calcium Chlorides Sulfate Arsenic (as As) Heavy metals Iron Lead Mercury Cyanide Citric, oxalic, phosphoric, tartaric acid Reducing sugars Sugars | max. 0.1 % max. 20 ppm max. 10 ppm max. 20 ppm max. 1 ppm max. 10 ppm max. 10 ppm max. 0.5 ppm max. 1 ppm max. 5 mg/kg passes test passes test FCC passes test |
| Physical-chemical-properties | Molecular formula Molecular weight Chemical name | $\text{CH}_3\text{CHOHCOOH}$ 90 2-hydroxypropionic acid |
| Regulatory / Registration | CAS number EEC Additive number GRAS status Complies with EC number | 79-33-4 (general 50-21-5) E270 Lactic acid 21CFR184.1061 FCC, 231/2012/EC 201-196-2 |



Suitability for Vegetarian and Vegan Diet

We hereby certify that the Jungbunzlauer products

^ **Lactic Acid**

are manufactured by fermentation, extraction or synthesis. Above mentioned products do not contain animal derivatives and have never been exposed to animal derivatives.

Furthermore, Jungbunzlauer does not use any ingredients or additives in the manufacture of its products that originate from animal sources or that have been in contact with animals.

Therefore, the above mentioned products are fully suitable to be consumed by vegetarians or vegans.