1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY / UNDERTAKING

# Product name
- PURAC®
- PURAC® HS
- PURAC® Sanilac
- PURAC® 80-DW
- PURAC® Vin
- PURAC® FCC 88
- PURAC® HiPure
- PURAC® PF

Use of the Substance
Food additive, Specialty chemical

Supplier
- Purac Biochem
  Arkelsedijk 46
  NL-4206 AC Gorinchem
  The Netherlands
  Telephone: +31 183 695695
  Fax: +31 183 695604
  Emergency telephone: +31 183 695695

- Purac Bioquimica
  Gran Vial 19 -25
  08160 Montmelo-Barcelona
  Spain
  Telephone: +34 93 568 6300
  Fax: +34 93 568 3955
  Emergency telephone: +34 93 568 6300 (Ext 222)

Supplier
- PBR sínteses
  Av. Rui Barbosa, 521
  Campos dos Goytacazes-RJ
  CEP 28013-000
  Brazil
  Telephone: +55 22 2737 7200
  Fax: +55 22 2737 7210
  Emergency Telephone: +55 22 2737 7200

- Purac America, Inc.
  111 Barclay Blvd.,
  Lincolnshire, IL 60069
  USA
  Telephone: +1 847 634 6330
  Fax: +1 847 634 1992
  Emergency Telephone: +1 847 634 1992

Supplier
- Purac Thailand
  3 Moo 2 – Asa Industrial Estate
  T. Banchang, A. Banchang
  Rayong 21130
  Thailand
  Telephone: +66 (38) 698 800
  Fax: +66 (38) 698 801
  Emergency telephone: +66 (38) 698 800

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name of the substance
L(+) Lactic Acid aqueous solution

Synonyms
Lactic Acid aqueous solution: S(+) -2-hydroxy propionic acid.

CAS-No.  79-33-4  EC-No. 201-196-2
Lactic Acid

REVISION DATE 05/10/10
REF. SD0010/2010-04

3. HAZARDS IDENTIFICATION

Most important hazards
Irritating to eyes and skin. Risk of serious damage to eyes.
May cause irritation of respiratory tract.
May cause irritation of the mucous membranes.

Specific hazards
Inhalation
Irritation, breathing difficulties, headache, dizziness

Skin contact
Irritation of digestive system

Eye contact
Severe irritation, blurred vision

Ingestion
Burns, vomiting, gastrointestinal disturbance

4. FIRST AID MEASURES

General advice
Show this safety data sheet to the doctor in attendance.

Inhalation
Move to fresh air. If symptoms persist, call a physician.

Skin contact
Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Obtain medical attention.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Ingestion
Consult a physician. If conscious, drink plenty of water. Never give anything by mouth to an unconscious person.

Protection of first-aiders
Wear impervious gloves and tightly fitting safety goggles.

Notes to physician
Oxygen, if needed. Avoid gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water, carbon dioxide (CO2), foam, dry chemical.

Extinguishing media which must not be used for safety reasons
None.

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

Special protective equipment for firefighters
In the event of fire, wear self contained breathing apparatus.

Specific methods
Standard procedure for chemical fires. Cool containers / tanks with water spray. Flash point > 234°F, (> 112°C)
**SAFETY DATA SHEET**

<table>
<thead>
<tr>
<th><strong>Lactic Acid</strong></th>
<th><strong>REVISION DATE</strong> 05/10/10 REF. SD0010/2010-04</th>
</tr>
</thead>
</table>

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Avoid contact with skin and eyes. Wear impervious gloves and tightly fitting safety goggles.

**Environmental precautions**
Do not flush into surface water or sanitary sewer system.

**Methods for cleaning up**
Dam up. Neutralize with limestone powder, lime, soda ash. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically and collect in suitable container for disposal.

### 7. HANDLING AND STORAGE

**Technical measures/Precautions**
Avoid temperatures above 392°F (200°C).

**Safe handling advice**
Avoid contact with skin and eyes. Wear impervious gloves and tightly fitting safety goggles. Do not breathe spray mist.

**Technical measures/Storage conditions**
Store according to all current regulations. Keep container tightly closed. Keep in a dry, cool place.

**Packaging material**
Plastic or stainless steel 316 L containers.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering measures to reduce exposure**
Insure adequate ventilation, especially in confined areas.

**Exposure limit(s)**
None.

**Personal protection equipment**

**Respiratory protection**
Not required; except in case of aerosol formation. Breathing apparatus needed only when aerosol or mist is formed.

**Hand protection**
Rubber gloves.

**Eye protection**
Face-shield, tightly fitting safety goggles.

**Skin and body protection**
Long sleeved clothing, chemical resistant apron boots.

**Hygiene measures**
Avoid contact with skin. When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use.

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Lactic Acid  

**PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>aqueous solution</td>
</tr>
<tr>
<td>Color</td>
<td>colorless/yellow/light brown</td>
</tr>
<tr>
<td>Odor</td>
<td>characteristic</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>90.08</td>
</tr>
<tr>
<td>pH</td>
<td>2 @ 77°F (25°C)</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>230°F (110°C) (40% solution) 257°F (125°C) (90% solution)</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 392 °F (&gt; 200°C)</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>none</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 234°F (&gt; 112°C)</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>not applicable</td>
</tr>
<tr>
<td>Density</td>
<td>1190 - 1250 kg/m³</td>
</tr>
<tr>
<td>Surface tension</td>
<td>50 - 44 mN/m (50 - 90% solution)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water solubility: completely soluble</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>log Pow = -0.62</td>
</tr>
<tr>
<td>Viscosity</td>
<td>5 - 60 mPa.s @ 77°F (25°C) (50 - 90% solution)</td>
</tr>
</tbody>
</table>

**STABILITY AND REACTIVITY**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Stable at normal conditions.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Avoid temperatures above 392°F (200°C).</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Oxidizing agents, metals, acids and bases.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides. Thermal decomposition can lead to release of irritating gases and vapors.</td>
</tr>
</tbody>
</table>
## 11. TOXICOLOGICAL INFORMATION

| **Acute toxicity** | LD50/oral/rat=3730 mg/kg  
LD50/oral/mouse=4875 mg/kg  
LD50/dermal/rabbit>2000mg/kg |
|-------------------|--------------------------|
| **Irritation**    | Eyes-rabbit: severe. Skin guinea pig: slight - none.  
Skin rabbit: severe. Tests on animals have shown that the effect of lactic acid on skin is species dependent. Human experience and results on guinea pigs have shown that it is irritant and not corrosive. |
| **Local effects** | Irritating to eyes and skin. Risk of serious damage to eyes. Inhalation of mist causes irritation of respiratory system. |
| **Carcinogen Status** | None. |
| **Mutagenic Data** | Tests on bacterial or mammalian cell cultures did not show mutagenic effects. |
| **Major effects of exposure** | Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough. Inhalation of vapors in high concentration may cause shortness of breath (lung oedema). Chronic exposure may cause dermatitis, gastrointestinal disturbance, coughing. |
| **Inhalation**    | May cause skin irritation. Prolonged skin contact may produce dermatitis. |
| **Skin contact**  | Severe eye irritation. Risk of serious damage to eyes. Liquid causes severe inflammation of conjunctiva and may cause severe damage of the cornea. |
| **Eye contact**   | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause stomach perforation. |
| **Ingestion**     | As an important metabolite in man, animals and plants, it is naturally formed and metabolised. |

Further information: As an important metabolite in man, animals and plants, it is naturally formed and metabolised.
12. ECOLOGICAL INFORMATION

Mobility
- Completely soluble.

Persistence / degradability
- Readily biodegradable, according to appropriate OECD test.
- Biochemical oxygen demand (BOD)5 = 0.45 mg O2/mg.
- Biochemical oxygen demand (BOD)20 = 0.60 mg O2/mg.
- Chemical oxygen demand (COD) = 0.90 mg O2/mg.

Bioaccumulation
- None.

Ecotoxicity
- EC50/48h/Daphnia = 240 mg/l
- LC50/48h/Fish = 320 mg/l
- EC50/Algae = 3500 mg/l (neutral)

Further information
- Natural product.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products
- Subject to disposal regulations

Contaminated packaging
- Clean container with water. Empty containers should be taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

US Regulations
- USA TSCA Inventory Status: Y
- SARA III: N
- California Proposition 65: N
- Carcinogen status:
  - OSHA: N
  - NTP: N
  - IARC: N
- FDA GRAS

EU Classification
- Symbols: Xi - Irritant
- R- Phrases:
  - R41 - Risk of serious damage to eyes.
  - R38 - Irritating to skin.
- S-Phrases:
  - S24 - Avoid contact with skin.
  - S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  - S37/39 - Wear suitable gloves and eye/face protection.
16. OTHER INFORMATION

Lactic Acid

NFPA Ratings (Scale 0-4)
1 (health) - 0 (flammability) - 0 (reactivity)

HMIS Rating
2 (health) - 0 (flammability) - 0 (reactivity) B (protective equipment)

CAS-No. 50-21-5 (general) EC-No. 200-018-0 (general)

EEC Food additive: E 270

Further information on the safety assessment of lactic acid and its salts can be obtained in a CFTA Report of June 6th 1997.

Additional data on the calculated ecotoxicity of lactic acid and its salts and esters can be obtained in a report entitled 'The ecotoxicity and biodegradability of lactic acid, alkyl lactate esters and lactic acid salts' by Bowmer et al. (Reference: Chemosphere 37: 1317-1333 (1998))

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# indicates updated section.
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