1. Identification of the substance / preparation and of the company / undertaking

Trade name: FUTERRO L-LACTIDE
SDS number: PRUB-PLA02
Chemical name: 3,6-dimethyl-1,4-dioxane-2,5-dione

MATERIAL USE: raw material

RESPONSIBLE FOR PLACING ON THE MARKET: see below this page.

EMERGENCY NUMBER:
FUTERRO: + 32 (0)69 45 22 76
info@futerro.com

Official advisory body:
The UK National Poisons Emergency number is 0870 600 6266
(Outside the UK: +44 870 600 6266)
NB: these services are only available to health professionals
IRL: The National Poisons Information Centre
PO Box 1297, Beaumont Hospital, Beaumont Road
Dublin 9.
Telephone: +353 (01) 837 9966 / +353 (01) 809 2568

2. Hazards identification

Main hazards:
irritant
the product reacts with water.
hydrolysis in water produces:
lactic acid
Corrosive

Symptoms related to use:
Inhalation:
fine dust may cause irritation of respiratory system and mucous.
exposure to spray, fumes and vapours produced by heated or burned product:
irritation of respiratory system.

Skin contact:
prolonged or frequent contacts may cause skin irritation.
in contact with hot material, may cause severe thermal burns

Eye contact:
Irritating to eyes
Risk of serious damage to eyes, loss of vision: lactic acid

Ingestion

Risk of irritation of respiratory system
May cause gastrointestinal irritation, nausea, vomiting and diarrhoea

Adverse environmental effects
the product is inherently biodegradable

### 3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>chemical name</th>
<th>3,6-dimethyl-1,4-dioxane-2,5-dione</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>L-Lactide</td>
</tr>
<tr>
<td>Concentration (%)</td>
<td>&gt; 99 %</td>
</tr>
<tr>
<td>CAS number</td>
<td>CAS: 4511-42-6</td>
</tr>
<tr>
<td>EINECS or ELINCS number</td>
<td>EINECS: 224-832-0</td>
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<tr>
<td>Symbol(s)</td>
<td>Xi</td>
</tr>
<tr>
<td>R Phrase(s)</td>
<td>37/38-41</td>
</tr>
<tr>
<td>R Phrase(s) used</td>
<td>some of the components of this preparation are classified following the European directives and have risk phrases (R), but only their code are indicated in this rubric. You may find the full text of them in rubric 16.</td>
</tr>
</tbody>
</table>

### 4. First-aid measures

**IN CASE OF HEAVY OR PERSISTENT DISTURBANCES, CALL A DOCTOR OR SEEK MEDICAL ADVICE URGENTLY**

**Route of exposure**

**Inhalation**

bring patient into fresh air
if necessary, give oxygen
if breathing has stopped: administer artificial respiration.
seek medical advice.

**Skin contact**

after contact with skin, wash immediately with plenty of soap and water

**Eye contact**

flush immediately with plenty of water, holding the eyelids open ( > 20’)
Get medical advice (ophthalmologist)

**Ingestion**

do not induce vomiting.
seek medical advice.

### 5. Fire - fighting measures
Stop the fire spreading. Call the fire brigade immediately. Evacuate non-essential personnel.

Extinguishing media

For minor fires: carbon dioxide (CO2) or powder. For more extensive fires: foam. Water spray (mist) to cool the surfaces exposed to the fire.

Do not use water jets (stick jets) for extinguishing fire since they could help to spread the flames.

Special peril

Complete combustion, with an excess of oxygen forms: carbon dioxide (CO2) and water vapour. Partial combustion, forms also: carbon monoxide (CO), soot and cracked products: aldehydes, ketones.

Protective equipment for firefighters

Wear suitable breathing equipment, in case of risk of exposure to vapour or fumes.

6. Accidental release measures

Personal precautions

Avoid contact with skin and eyes and inhalation.

Refer to points 8 and 13.

After spillage / leakage

On soil

Recover the spilled product by sweeping or suction; put it in containers to facilitate its disposal. Dispose safely in accordance with local or national regulations.

On water

The product is water soluble. Refer to a specialist for waste disposal in a safe manner in accordance with local or national regulations.

7. Handling and storage

Handling

Avoid contact with skin and eyes and inhalation.

Technical measures

All pneumatic transport equipment must be electrically earthed. Avoid dust accumulation by use of filters in the pneumatic transport equipment.

Stockage

Storage conditions

Store at ambient temperature (< 20 °C). Store away from heating source. Avoid static electricity build up with connection to earth. Store in dry, well-ventilated area.
8. Exposure controls / personal protection

Exposure controls

OCCUPATIONAL EXPOSURE LIMIT

- Respirable dust particles:
  - US (ACGIH-2007): TLV-8h TWA: 3 mg/m³
  - UK: HSE EH40/2005:
    - Long-term exposure limit (8-hour TWA reference period): 4 mg/m³ (Respirable Dust)
  - IRL(2002): OEL (8h): 4 mg/m³ (respirable)
  - ZA (2006): OEL (8h): 5 mg/m³ (respirable particulate: PNOC)

- Inhalable dust particles:
  - US (ACGIH-2007): TLV-8h TWA: 10 mg/m³
  - UK: HSE EH40/2005:
    - Long-term exposure limit (8-hour TWA reference period): 10 mg/m³ (Total Inhalable Dust)
  - IRL(2002): OEL (8h): 10 mg/m³ (total inhalable)
  - ZA (2006): OEL (8h): 10 mg/m³ (inhalable particulate: PNOC)

EXPOSURE CONTROLS

Occupational exposure controls

Personal protection

- Respiratory protection: in case of risk of overexposure to dust, vapour or fumes (during product processing), it is recommended that a local exhaust system is placed above the conversion equipment (a fume hood) and the working area must be properly ventilated.
  - wear a suitable anti-dust respirator
  - recommended filter type: P1

- Skin and body protection: where exposure is likely, protective clothing must be worn including gloves

- Eye protection: goggles/spectacles

Other personal protection: safety non-slip shoes in areas where spills or leaks can occur.

Industrial health measures: avoid contact with skin and eyes.

- do not store near food products.
- remove all contaminated clothing and remove protective clothing when the work is completed.

Environmental exposure controls: unregulated
### 9. Physical and chemical properties

**GENERAL INFORMATION**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>crystals</td>
</tr>
<tr>
<td>Physical state at 20°C</td>
<td>solid</td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
</tbody>
</table>

**IMPORTANT HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION**

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<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in physical state at 1013 hPa</td>
<td></td>
</tr>
<tr>
<td>Melting point</td>
<td>98.7 °C</td>
</tr>
<tr>
<td>Flash point (ASTM D 1929)</td>
<td>154 °C</td>
</tr>
<tr>
<td>Decomposition point</td>
<td>no information available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>388 °C</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>no information available</td>
</tr>
<tr>
<td>Density, mass at 20°C</td>
<td>1340 kg/m³</td>
</tr>
<tr>
<td>Solubility in water at 20°C</td>
<td>soluble</td>
</tr>
<tr>
<td>pH value (concentrated product)</td>
<td>7</td>
</tr>
<tr>
<td>Viscosity</td>
<td>not applicable</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>144 kg/kmol</td>
</tr>
</tbody>
</table>

**OTHER INFORMATION**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</tbody>
</table>

### 10. Stability and reactivity

**Stability**

stable under normal operating conditions of storage, handling and use the product reacts with water.

hydrolysis in water produces: lactic acid Corrosive

**CONDITIONS TO AVOID**

water avoid contact with strong oxidizing materials avoid proximity or contact with flames or sparks

**HAZARDOUS DECOMPOSITION PRODUCTS**

complete combustion, with an excess of oxygen forms: carbon dioxide (CO2) and water vapour.

partial combustion, forms also: carbon monoxide (CO), soot and
Hazardous properties

- cracked products: aldehydes, ketones
- hygroscopic
- May polymerize on exposure to temperature rise

11. Toxicological information

**ACUTE TOXICITY**

**Ingestion**

In case of ingestion of small quantities, no important effect observed. In case of ingestion of larger amounts: abdominal pain, diarrhoea, ...

- Rat, oral LD50 (mg/kg) > 5
- Skin contact irritant
- Rabbit dermal LD50 (mg/kg) > 2000

**LOCAL EFFECT**

**Inhalation**

Dust may cause irritation of respiratory system.

- Skin contact may be irritating
  - Thermal decomposition products are produced at elevated temperatures and these may be irritating

**Eye contact**

Irritating to eyes

- Fine dust may cause irritation to ocular mucous.
- Risk of serious damage to eyes, loss of vision (lactic acid)

**SENSITIZATION**

Skin contact following the available information, not regarded as a sensitizer

**SPECIFIC EFFECTS**

No particular preoccupation for man

(According to available experimental data)

12. Ecological information

Information on ecological effects avoid losses to the environment whenever possible.

**MOBILITY**

- **water / air** the product is water soluble.
- **soil and sediments** because of its physico-chemical properties, the product has a low soil mobility

**PERSISTENCE AND DEGRADABILITY**

- **Biodegradation** the product is inherently biodegradable

**BIOACCUMULATIVE POTENTIAL**

Potential bioaccumulation of the product in environment is very low
Safety data sheet

FUTERRO L-LACTIDE

Product: PRUB-PLA02
Version (en) nr: 3.00

13. Disposal considerations

Waste disposal: dispose in a safe manner in accordance with local/national regulations. Authorized disposal. Do not dispose off by means of sinks, drains or into the immediate environment.

Disposal of contaminated packaging: dispose in a safe manner in accordance with local/national regulations.

14. Transport information

Road (ADR) / Rail (RID): Not restricted for transport.

UN Number: not applicable

Marine (IMO): Not restricted for transport.

Air transport (ICAO / IATA): Not restricted for transport.

15. Regulatory information

Labelling and Classification EC: Classification according to directives 67/548/EEC and 1999/45/EC.

Symbol(s) EC: Xi : Irritant

R Phrase(s): R 37/38 :Irritating to respiratory system and skin.
R 41 :Risk of serious damage to eyes.

S Phrase(s): S 24 :Avoid contact with skin.
S 26 :In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 :Wear suitable gloves and eye / face protection.

Germany

Wassergefährdungsklasse: NWG: non-hazardous to waters

Registration: listed on the ASIA-PAC inventory.
listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)- EEC Directive 79/831, sixth Amendment of the directive 67/548 (dangerous substances).
listed on the United States TSCA (Toxic Substances Control Act) inventory.
listed on the Japanese ENCS (Existing & New Chemical Substances) inventory.
listed on the Canadian NDSL (Non Domestic Substances List) inventory.

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FUTERRO
23 Place d'Escanaffles
B-7760 Escanaffles
BELGIUM
phone : + 32(0)69.45.22.76 - fax : + 32(0)69.45.22.97
16. Other information

Training advice
The use of this product requires specific training. The user must receive all product information in order to handle the product safely (personal protection equipment and best practice standards).

Recommended uses
Restricted to professional users

Further information
no information available

R Phrase(s) used
R 37/38 : Irritating to respiratory system and skin. R 41 : Risk of serious damage to eyes.


This information applies to the PRODUCT AS SUCH and conforming to specifications of FUTERRO. In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear. The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress. Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes. The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive. It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product. It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

The (*) indicate the changes made with respect to the previous version.