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

<table>
<thead>
<tr>
<th>Trade name</th>
<th>FUTERRO POLYLACTIC ACID OLIGOMERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDS number</td>
<td>PRUB-PLA03</td>
</tr>
<tr>
<td>Chemical name</td>
<td>Polylactique acide</td>
</tr>
<tr>
<td>MATERIAL USE</td>
<td>raw material ( Pre-polymers )</td>
</tr>
<tr>
<td>RESPONSIBLE FOR PLACING ON THE MARKET</td>
<td>see below this page.</td>
</tr>
<tr>
<td>Email address: <a href="mailto:Petrochemicals.felr-sds@total.com">Petrochemicals.felr-sds@total.com</a> ( Safety data sheet )</td>
<td></td>
</tr>
</tbody>
</table>

### 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**

- none to our knowledge
- low risk for temperatures below 150 °C

**Symptoms related to use**

**Inhalation**

- fine dust may cause irritation of respiratory system and mucous.
- if heated to more than 150°C, the product may form vapours or fumes which may cause irritation of respiratory tract and cause coughing and sensation of shortness of breath.

**Skin contact**

- may be irritating
- in contact with hot material, may cause severe thermal burns

**Eye contact**

- fine dust may cause irritation to ocular mucous.

**Ingestion**

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

**Adverse environmental effects**

- the product is inherently biodegradable

**Adverse physicochemical effects**

- flowing product can create electrical charge, resulting sparks may ignite dust or cause an explosion in some concentration ranges.

### 3. Composition / information on ingredients

| chemical name | Polylactique acide |

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FUTERRO POLYLACTIC ACID OLIGOMERS

Concentration (%) > 98 %
CAS number CAS: 9051-89-2
EINECS or ELINCS number the product is a polymer, following the European regulation, registration on the EINECS (European Inventory of Existing Commercial Chemical Substances) inventory is not required.

Substances presenting a health hazard none to our knowledge

4. First-aid measures

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

Route of exposure

Inhalation exposure to spray, fumes and vapours produced by heated or burned product:
bring patient into fresh air
seek medical advice.

Skin contact in case of irritation caused by fine dust: wash with copious volumes of water, until the irritation disappears.
exposure to splashing of hot product:
treat the affected part with cold water (by spraying or immersion).
no attempt should be made to detach molten product adhering to the skin or to remove clothing attached with molten material, the injured body part would risk being pulled out; usually the layer detaches itself after a few days.
in case of severe burns, seek hospital treatment

Eye contact in case of irritation caused by fine dust: wash with copious volumes of water, until the irritation disappears.
Get medical advice (ophthalmologist)
exposure to splashing of hot product:
treat the eyes with cold water.
in case of severe burns, seek hospital treatment

Ingestion do not induce vomiting.
seek medical advice immediately.

5. Fire - fighting measures

Technical measures stop the fire spreading.
call the fire brigade immediately.
evacuate non-essential personnel

Extinguishing media

Suitable for minor fires : carbon dioxide (CO2) or powder , water
for more extensive fires : foam. water spray (mist) to cool the surfaces exposed to the fire.

Not to be used do not use water jets (stick jets) for extinguishing fire since they could help to spread the flames

Special exposure hazards dust may form an explosive mixture with air, ignited by sparks or sources of ignition.

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

### 6. Accidental release measures

- **After spillage / leakage**
  - on soil: granules spilled on the floor can cause a risk of slipping on smooth surfaces.
  - refer to points 8 and 13
  - 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.
  - prevent the spilled material from spreading.
  - the product has a density > 1000 kg/m³, it sinks in water.
  - refer to a specialist for waste disposal in a safe manner in accordance with local or national regulations.

- **On water**
  - prevent the spilled material from spreading.
  - the product has a density > 1000 kg/m³, it sinks in water.

### 7. Handling and storage

**HANDLING**

- Technical measures: all pneumatic transport equipment must be electrically earthed.
- avoid dust accumulation by use of filters in the pneumatic transport equipment.

**STORAGE**

- Storage conditions: store at ambient temperature and at atmospheric pressure in original packaging (plastic or cardboard boxes) or in silo made of appropriate material (aluminium, stainless steel, ...).
- do not store near highly flammable materials.
- store away from heating source. avoid static electricity build up with connection to earth.
- store in dry, well-ventilated area.
- prolonged storage preferably out of the sun or other sources of radiation
- two pallets may be stacked on flooring in sound condition.
- however, when the pictorial warning as shown on the top of the safety data sheet is affixed to the pallet, the pallet must never be placed either on top of or below another pallet.
- N.B. : here the term pallet includes both the pallet and its load.
- when pallets are stored in racks, it should be checked whether the pallet is fit for stacking in the concerned racks.

- Incompatible materials: avoid contact with strong oxidizing materials, water

- **SPECIFIC USE(S)**: no information available

- refer to point 8

### 8. Exposure controls / personal protection

**Exposure controls**

- refer to point 8
## FUTERRO POLYLACTIC ACID Oligomers

### Ocupational Exposure Limit

<table>
<thead>
<tr>
<th>Country</th>
<th>Limit Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>US (ACGIH-2007)</td>
<td>TLV-8h TWA (Respirable Dust)</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>UK</td>
<td>Long-term exposure limit</td>
<td>4 mg/m³</td>
</tr>
<tr>
<td>IRL (2002)</td>
<td>OEL (8h) (respirable)</td>
<td>4 mg/m³</td>
</tr>
<tr>
<td>ZA (2006)</td>
<td>OEL (8h) (respirable particulate: PNOC)</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td>ZA (2006)</td>
<td>OEL (8h) (inhalable particulate: PNOC)</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### Inhalable Dust Particles

<table>
<thead>
<tr>
<th>Country</th>
<th>Limit Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>US (ACGIH-2007)</td>
<td>TLV-8h TWA (Total Inhalable Dust)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>UK</td>
<td>Long-term exposure limit</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>IRL (2002)</td>
<td>OEL (8h) (total inhalable)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>ZA (2006)</td>
<td>OEL (8h) (inhalable particulate: PNOC)</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

### 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.
- Shower and eye fountain available.

**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

### Physical and Chemical Properties

#### General Information
- Appearance: pellets from a diameter of 2 to 5 mm
- Physical state at 20°C: solid
- Colour: transparent, translucent, white opaque
- Odour: odourless

#### Important Health, Safety and Environmental Information
- Change in physical state at 1013 hPa
  - Melting range: 20 to 180°C
  - Softening point: 55 to 65°C
  - Flash point (ASTM D 1929): > 250°C
  - Decomposition point: > 220°C
  - Auto-ignition temperature: > 250°C
  - Explosion limits: Lower 0.015 (for polymer dust < 63 µm)
  - Vapour pressure at 20°C: none

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**FUTERRO POLYLACTIC ACID OLIGOMERS**

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FUTERRO POLYLACTIC ACID OLIGOMERS

Density, mass at 20°C (kg/m³)  1200 to 1300
Solubility in water at 20°C (mg/l)  insoluble
pH value (concentrated product)  not applicable
Viscosity (mm²/s)  not applicable

OTHER INFORMATION  no information available

10. Stability and reactivity

Stability  stable under normal operating conditions of storage, handling and use
Hazardous reactions  dust may form an explosive mixture with air, ignited by sparks or sources of ignition.

CONDITIONS TO AVOID

avoid contact with strong oxidizing materials , water
avoid proximity or contact with flames or sparks
it is recommended not to heat at a temperature higher than 230 °C

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 cracked products: aldehydes, ketones

Advice to prevent explosion

avoid dust accumulation by use of filters in the pneumatic transport equipment.
thoroughly ventilate the working place.
all conductive materials must be electrically earthed.

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, ...

LOCAL EFFECT

Inhalation  dust may cause irritation of respiratory system.
if heated to more than 150°C, the product may form vapours or fumes which may cause irritation of respiratory tract and cause coughing and sensation of shortness of breath.

Skin contact  may be irritating
in contact with hot material, may cause severe thermal burns
thermal decomposition products are produced at elevated temperatures and these may be irritating

Eye contact  fine dust may cause irritation to ocular mucous.
splashing of molten droplets causes ocular tissue burns.
thermal decomposition products are produced at elevated temperatures and these may be irritating

SENSITIZATION

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

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

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**FUTERRO POLYLACTIC ACID OLIGOMERS**

| Water / air | there is a slow loss by evaporation |
| 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

**Ecotoxicity**

- because of its structure, the product should not be dangerous for aquatic life

| 72 hours-IC50-Algae (mg/l) | > 1100 mg/l |

**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 | Not classified according to EEC directives 67/548/EEC (dangerous substances) and 1999/45/EC (dangerous preparations). |
| Symbol(s) EC | |
| **Germany** | |
| Wassergefährdungsklasse | NWG: non-hazardous to waters |
| Registration | the product is a polymer, following the European regulation, registration on the EINECS (European Inventory of Existing Commercial Chemical Substances) inventory is not required. listed on the United States TSCA (Toxic Substances Control Act) inventory listed on the Canadian DSL (Domestic Substances List) inventory. listed on the Japanese ENCS (Existing & New Chemical Substances) inventory. listed on the Korean ECL (Existing Chemical List) inventory. listed on the People's Republic of China register: CRC-SEPA (Chemical Registration Center for Chinese State Environmental Protection Administration) |

**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 |

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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.