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

<table>
<thead>
<tr>
<th>Trade name</th>
<th>FUTERRO POLYLACTIQUE ACIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDS number</td>
<td>PRUB-PLA01</td>
</tr>
<tr>
<td>Chemical name</td>
<td>Polylactique acide</td>
</tr>
<tr>
<td>MATERIAL USE</td>
<td>raw material, polymer</td>
</tr>
<tr>
<td>RESPONSIBLE FOR PLACING ON THE MARKET</td>
<td>see below this page.</td>
</tr>
<tr>
<td>Trade name of the firm</td>
<td>Email address: <a href="mailto:Petrochemicals.felr-sds@total.com">Petrochemicals.felr-sds@total.com</a> (Safety data sheet)</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: combustible if exposed to flames.

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
FUTERRO POLYLACTIQUE ACIDE

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

FUTERRO
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fax : + 32(0)69.45.22.97
Email :

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### Safety data sheet

**FUTERRO POLYLACTIQUE ACIDE**

<table>
<thead>
<tr>
<th>Protective equipment for firefighters</th>
<th>wear suitable breathing equipment, in case of risk of exposure to vapour or fumes.</th>
</tr>
</thead>
</table>

#### 6. Accidental release measures

- **After spillage / leakage on soil**
  - Granules spilled on the floor can cause a risk of slipping on smooth surfaces.
  - 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.

- **After spillage / leakage on water**
  - 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.

#### 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 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.

- Storage of pallets
  - Avoid contact with strong oxidizing materials, water.

- Incompatible materials
  - No information available

- **Specific Use(s)**
  - Refer to point 8

#### 8. Exposure controls / personal protection

**Exposure controls**

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*FUTERRO*

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FUTERRO POLYLACTIQUE ACIDE

Safety data sheet

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

9. 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 (°C) from 150 to 180
Softening point (°C) 55 to 65
Flash point (ASTM D 1929)(°C) > 250
Decomposition point (°C) > 220
Auto-ignition temperature (°C) > 250
Explosion limits (kg/m³) 0.015 ( for polymer dust < 63 µm )
Vapour pressure at 20°C (hPa) none
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
FUTERRO POLYLACTIQUE ACIDE

Safety data sheet

PERSISTENCE AND DEGRADABILITY

Biodegradation: the product is inherently biodegradable

BIOMASS POTENTIAL

Potential bioaccumulation of the product in environment is very low because of its structure, the product should not be dangerous for aquatic life.

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).

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.
**FUTERRO POLYLACTIQUE ACIDE**

<table>
<thead>
<tr>
<th>Further information</th>
<th>no information available</th>
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</table>

Revised : 25/02/2008  
Supersedes : 25/02/2008


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.