



FUTERRO POLY-LACTIDE

EXTRUSION GRADE / *Futerra ref.*

GENERAL PURPOSE POLYLACTIC ACID / *product name*

DESCRIPTION

Futerra® PLA polymer extrusion grade is a thermoplastic resin derived from annually renewable resources and is specifically designed for extrusion & thermoforming applications as, dairy containers, food service ware, transparent food containers, blister packaging, cold drink cups. Candy twist wrap, salad and Vegetable bags, window Envelope film, lidding film • Label film, Injection Stretch Blow Molded, or ISBM Bottles for 1:2 stage operations. Ideal for applications such as, Fresh Dairy, Edible Oils, Fresh Water

Futerra® PLA polymer is a clear extrusion sheet grade and is easily processed on conventional extrusion and thermoforming equipment. The material is stable in the molten state, provided that the drying procedures are followed.

PURITY

L-poly-Lactide content	% w/w	Min. 99
Water content	ppm	Max. 250
Free Lactide content	% w/w	Max. 0.4

PHYSICAL PROPERTIES PLA POLYMER

Specific Gravity @25°C		1.24	ISO 1183
Melt Density @230°C		1.08-1.12	
Melt Index @1900°C/2.16kg	g/10 min	2 -4	ISO 1133
Melt Index @210°C/2.16kg	g/10 min	5-7	ISO 1133
Haze (2 mm)	%	< 5	ISO 14782
Transmittance (2 mm)	%	> 90	ISO 14782
Glass Transition Temperature	°C	52-60°C	ISO 11357
Crystalline Melt Temperature	°C	145-175°C	ISO 11357

MECHANICAL PROPERTIES

Tensile Strength @ Break	MPa	55	ISO 527
Tensile Yield Strength	MPa	60	ISO 527
Tensile Modulus	Mpa	3500	ISO 527
Tensile Elongation	%	6.0	ISO 527
Notched Izod Impact	kJ/m ²	3.5	ISO 180
Flexural yield Strength	MPa	90	ISO 178

(1) Typical properties; not to be construed as specifications.

Information contained in this publication is true and accurate at the time of publication and to the best of our knowledge. The nominal values stated herein are obtained using laboratory test specimens. Before using one of the products mentioned herein, customers and other users should take all care in determining the suitability of such product of the intended use. Unless specifically indicated, the products mentioned herein are not suitable for applications in the pharmaceutical or medical sector. The Companies within FUTERRO do not accept any liability whatsoever arising from the use, application or processing of any product described herein. No information contained in this publication can be considered as a suggestion to infringe patents. The Companies disclaim any liability that may be claimed for infringement or alleged infringement of patents.

Place d'Escauffles, 23 B-7760 Escauffles Tel. : +32 (0)69 45 22 76 Fax : +32 (0)69 45 22 97

E-mail : info@futerra.com Web Site : www.futerra.com

TVA : BE 0892 199 070 IBAN : BE12 0015 3245 4092 BIC : GEBABEBB



PROCESSING INFORMATION

Machine Configuration

Futerra® PLA polymer will process on conventional extrusion machinery with the following equipment: general purpose screw with L/D ratios from 24:1 to 32:1 and compression ratio of 2.5:1 to 3:1. Smooth barrels are recommended.

Startup and Shutdown

Futerra® PLA polymer is not compatible with a wide variety of commodity resins, and special purging sequences should be followed:

- 1. Clean extruder and bring temperatures to steady state with low-viscosity, general-purpose polystyrene or polypropylene.
- 2. Vacuum out hopper system to avoid contamination.
- 3. Introduce PLA polymer into the extruder at the operating conditions used in Step 1.
- 4. Once PLA polymer has purged, reduce barrel temperatures to desired set points.
- 5. At shutdown, purge machine with high-viscosity polystyrene or polypropylene.

Drying

In-line drying may be required. A moisture content of less than 0.025% (250 ppm) is recommended to prevent viscosity degradation. Typical drying conditions for crystallized granules are 2 hours at 90°C or to a dew point of -40°C, airflow rate of greater than 1.7 m³/kg per hour of resin throughput. The resin should not be exposed to atmospheric conditions after drying. Keep the package sealed until ready to use and promptly reseal any unused material. Pellets that have been exposed to the atmosphere for extended time periods will require additional drying time. Amorphous regrind must be crystallized prior to drying, to assure efficient and effective drying.

PROCESSING TEMPERATURE PROFILE (1)

Melt Temperature	210°C
Feed Throat	45°C
Feed Temperature	180°C
Compression Section	190°C
Metering Section	200°C
Adapte	200°C
Die	190°C
Screw Speed	20-100 rpm

Handling and storage

Futerra® PLA should be stored at ambient temperature and at atmospheric pressure in its original packaging bags. The product should be stored in dry, well-ventilated areas, and it is recommended to avoid prolonged storage under extreme temperatures, direct sunlight or other sources of radiation.

It is advisable to convert the product within 12 months after delivery, provided appropriate storage conditions are used.

Please refer to the Safety Data Sheet for further information.

REGISTRATION

CAS number	9051-89-2
------------	-----------

Information contained in this publication is true and accurate at the time of publication and to the best of our knowledge. The nominal values stated herein are obtained using laboratory test specimens. Before using one of the products mentioned herein, customers and other users should take all care in determining the suitability of such product of the intended use. Unless specifically indicated, the products mentioned herein are not suitable for applications in the pharmaceutical or medical sector. The Companies within FUTERRO do not accept any liability whatsoever arising from the use, application or processing of any product described herein. No information contained in this publication can be considered as a suggestion to infringe patents. The Companies disclaim any liability that may be claimed for infringement or alleged infringement of patents.

Place d'Escauffles, 23 B-7760 Escauffles Tel. : +32 (0)69 45 22 76 Fax : +32 (0)69 45 22 97

E-mail : info@futerra.com Web Site : www.futerra.com

TVA : BE 0892 199 070 IBAN : BE12 0015 3245 4092 BIC : GEBABEBB