



PRODUCT DATA SHEET

EarthBi EXT 002

DESCRIPTION

EarthBi is a bio based polymer derived from natural resources and belonging to the PLA family. As other bio based polymers EarthBi offers a significant reduction in carbon footprint compared to oil-based plastics.

EarthBi EXT 002 is a general purpose grade for extrusion, thermoforming, sheet, film and fiber. It shows medium viscosity, high crystallinity, high molecular weight and high melting temperature.

PROCESSING INFORMATION

EarthBi polymers can be processed on conventional injection moulding machines. PLA polymers are quite sensitive to thermal degradation that means they need to minimize the residence time at high temperature. Screw with a L/D ratio of 20:1 can be sufficient for general purpose. Pre-drying is always recommended.

EXT 002 PHYSICAL PROPERTIES

| PHYSICAL PROPERTIES | METHOD | TYPICAL VALUE |
|---------------------------------------|-------------|---------------|
| Shape | | Round pellets |
| Indice di giallo | ASTM D6290 | <10 |
| Density (g/ml) | ISO 1183 | 1,25±10% |
| Glass Transition (°C) | DSC | 60±5 |
| Residual monomer (%w/w) | Gas Chrom. | <0,3 |
| Moisture (ppm) | Karl-Fisher | <250 |
| MFI 2,16 Kg/190°C (g/10') | ISO 1133-1 | 15 ± 5 |
| D-isomer (%) | Gas Chrom. | <0,3 |
| Melting Point (°C) | DSC,onset | 180 |
| Crystallinity (%) | DSC | 45-55 |
| MECHANICAL PROPERTIES | METHOD | TYPICAL VALUE |
| Tensile modulus (MPa) | ISO 527-1 | 3500 |
| Tensile strength (MPa) | ISO 527-1 | 50 |
| Elongation at break (%) | ISO 527-1 | ≤5% |
| Hot deflection temp, amorph. (°C) | ISO 75-1 | 55-60 |
| Hot deflection temp, crystalline (°C) | ISO 75-1 | 100-110 |



PROCESSING SUGGESTIONS

| PREDRYING | | 4-6 HOURS AT 100°C |
|------------------|--|--------------------|
| Throat | | 20-40°C |
| Feed zone | | 155-175 °C |
| Compression zone | | 180-220 °c |
| Metering zone | | 180-220 °c |
| Tmelt | | 180-210 °C |
| Back pressure | | 50-100 bar |

MOISTURE & PRE-DRYING

It is recommended to dry EarthBi EXT 002, as all the polymers PLA based, from the packaging for 4-6 hours at 80- 100°C. Drying of semicrystalline PLA homopolymer can be performed in a hot air dryer, air with a dew point of - 40°C or less. It is recommended to reduce the moisture content before melt processing to a level less than 250ppm and preferably less than 100 ppm, measured by e.g. Karl-Fischer. Predrying is important essentially to convert the pellets by injection molding, film and sheet production. Moisture causes hydrolysis of the PLA polymers in the molten state, resulting in reduced molecular weight and poor mechanical performance in the final part.

PACKAGING & STORAGE CONDITIONS

EarthBi EXT 002 is available in 600 kg aluminum-lined octabins and on request in 20 Kg aluminum-lined boxes. It is recommended to store PLA polymers in its closed, original moisture barrier packaging at temperatures below 50°C. Storage in direct sunlight should be avoided. The supplied PLA polymer pellets are typically semi-crystalline, unless otherwise reported.

