

## PRODUCT DATA SHEET

# EarthBi EXT 404

### 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 404 is a general purpose grade for extrusion, thermoforming, sheet, film and fiber. It shows very high viscosity, low crystallinity, very high molecular weight and low melting temperature.

### PROCESSING INFORMATION

EarthBi polymers can be processed on conventional extruders. 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.

### TYPICAL PROPERTIES

PHYSICAL PROPERTIES	METHOD	TYPICAL VALUE
Shape		Round pellets
Yellowness Index	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	3±1
D-isomer (%)	Gas Chrom.	4
Melting Point (°C)	DSC,onset	157
Crystallinity (%)	DSC	20-30
MECHANICAL PROPERTIES	METHOD	TYPICAL VALUE
Tensile modulus (MPa)	ISO 527-1	3500
ISO 527-1	ISO 527-1	50
3500 Tensile strength (MPa) ISO 527-1 50	ISO 527-1	≤5%
Elongation at break (%)	ISO 75-1	55-60
ISO 527-1	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 404, 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 404 is available in 600/1200 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.

