

LATER 4 F1

Product made of Polybutylene Terephthalate (PBT). Unfilled. PFAS-free product.

Versions of product mentioned herein are suitable for applications in contact with foodstuffs or for toy manufacturing. Nevertheless, manufactured parts have to be verified according to the specific directives.

The products mentioned herein are not suitable for applications in the pharmaceutical, medical or dental sector.

PHYSICAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
Density	ISO 1183	1.32 g/cm ³
Linear shrinkage at moulding		
Longitudinal (2.0mm/60MPa)	ISO 294-4	1.70 ÷ 2.00 %
Transversal (2.0mm/60MPa)	ISO 294-4	1.70 ÷ 2.00 %
Dimensional stability	---	58
Moisture absorption		
saturation, in air	ISO 62-4	0.22 %

MECHANICAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
CHARPY impact strength		
Unnotched, at 23°C	ISO 179-1eU	NB kJ/m ²
Notched, at 23°C	ISO 179-1eA	6.0 kJ/m ²

MECHANICAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
Tensile elongation		
At yield (5 mm/min), 23°C	ISO 527	8.0 %
At break (5 mm/min), 23°C	ISO 527	>50 %
Tensile strength		
At yield (5 mm/min), 23°C	ISO 527	50 MPa
At break (5 mm/min), 23°C	ISO 527	NB MPa
Elastic modulus		
Tensile (1 mm/min), 23°C	ISO 527	2400 MPa

THERMAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
Coefficient of linear thermal expansion (CLTE)		
30°C to 100°C (longitudinal)	ISO 11359	120 × 10 ⁻⁶ K ⁻¹
30°C to 100°C (transversal)	ISO 11359	120 × 10 ⁻⁶ K ⁻¹
VICAT - Softening point		
50 N (heating rate 120°C/h)	ISO 306	170 °C
HDT - Heat Deflection Temperature		
0.45 MPa	ISO 75	165 °C
1.81 MPa	ISO 75	55 °C
Thermal conductivity		
in plane	ASTM E 1461-92	0.2 W/(m·K)
through plane	ASTM E 1461-92	0.2 W/(m·K)

ELECTRICAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
Electrical resistivity		
surface, dry	ASTM D 257 / ASTM D4496	1E12 ohm
Dielectric strength (short period)		
2 mm thickness, 23°C, dry	ASTM D 149	20 kV/mm

STORAGE

Best storage conditions of sealed, undamaged packages are warm environmental temperature in dry storage facilities able to protect from weather and accidental damage.

HANDLING AND SAFETY

Detailed information about a safe treatment of the material are indicated in the "Material Safety Data Sheet" (MSDS) furnished with the first material supply. The MSDS may be also sent again in case of loss.

PREDRYING CONDITIONS (Hot-air dryer)

Predrying needed. Predrying conditions are: at least 2 hours at $90 \div 120^{\circ}\text{C}$. Increase time in case of wet material. Maximum suggested moisture content: 0.05%. Use of desiccant dryers or vacuum ovens allows a reduction in drying time.

BARREL TEMPERATURE PROFILE

Suggested barrel temperature profile (zone 1 - zone 2 - zone 3 - nozzle): 235-240-245- 240°C .

RESIDENCE TIME

Maximum allowable residence time: $5 \div 7$ minutes. Do not exceed this limit. Maximum number of complete shots (in the barrel) suggested: $2 \div 6$

MELT TEMPERATURE

Suggested range of melt temperature: $230 \div 240^{\circ}\text{C}$. On small machines, running short cycles, it is possible to use higher melt temperatures to improve plastification, fluidity and surface appearance, paying attention to any indication of material degradation.

MOULD TEMPERATURE

Suggested range of mould temperature: $50 \div 70^{\circ}\text{C}$. This can be significantly different from the tool settings, due to the cooling system efficiency and the accuracy of the temperature control on the tool. If moulding temperature is lower than suggested, part annealing may be necessary.

INJECTION SPEED

Advisable injection speed: medium. Best results are achieved by using an injection profile.

TANGENTIAL SCREW VELOCITY (V)

Maximum suggested tangential velocity (V): $0.2 \div 0.3$ m/s. The maximum rotational speed (in rpm) may be calculated by means of the following equation: $\text{rpm} = V/d * 19100$, where d is the screw diameter (mm).

INJECTION PRESSURE

Maximum advisable injection pressure at nozzle: $70 \div 90$ MPa. Please, check on manual of injection moulding machine the ratio between specific pressure (at nozzle) and hydraulic pressure (of oil).

PACKING PRESSURE

Typical suggested packing pressure (at nozzle): $50 \div 75\%$ of injection pressure.

CUSHION

Minimum suggested cushion: $3 \div 6$ mm.

BACK PRESSURE

Suggested backpressure: $3 \div 10$ bar (hydraulic pressure).

REGRIND USAGE

Maximum suggested regrind percentage: 15%. In-loop regrind is suggested. Regrind must be dried.

HOT RUNNER MOULDS

Hot runner moulds can be used when a very tight temperature control is assured.

VALVE GATES / SMALL GATES

Valve gates or small injection gates can be used.

EQUIPMENT WEAR AND CORROSION

Usually, critical processing conditions (high injection rate, high back pressure and high screw rotating speed, etc.) and/or disadvantageous geometric conditions (low wall thickness, low diameters, sharp fillet radius, etc.) generate wear on equipment. Wear increases in case of filled materials (particularly fibres filled ones). Appropriate surface treatments of equipment are suggested in these cases, as well as a proper venting to avoid material overheating. Standard steel can be used to make the mould.

Check the proper "Moulding guide" for further details.

APPROVALS

Please, check our site or contact LATI for details.

CONTACTS

LATI Industria Termoplastici S.p.A.