

LARAMID K/40 HM

Compound based on Semi-aromatic polyamide (PPA). Carbon fibres. High tensile modulus. PFAS-free product.

The products mentioned herein are not suitable for applications in contact with foodstuffs or for potable water transportation, or for toy manufacturing.

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	1.37 g/cm ³
Linear shrinkage at moulding		
Longitudinal (2.0mm/60MPa)	ISO 294-4	0.05 ÷ 0.20 %
Transversal (2.0mm/60MPa)	ISO 294-4	0.40 ÷ 0.55 %
Dimensional stability	---	60
Moisture absorption		
saturation, in air	ISO 62-4	0.85 %
MECHANICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
CHARPY impact strength		
Unnotched, at 23°C	ISO 179-1eU	70.0 kJ/m ²
Notched, at 23°C	ISO 179-1eA	10.0 kJ/m ²
MECHANICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Tensile elongation		
At break (5 mm/min), 23°C	ISO 527	1.0 %
At break (5 mm/min), 60°C	ISO 527	1.1 %
At break (5 mm/min), 90°C	ISO 527	1.2 %
At break (5 mm/min), 120°C	ISO 527	2.3 %
At break (5 mm/min), 150°C	ISO 527	2.5 %
Tensile strength		
At break (5 mm/min), 23°C	ISO 527	330 MPa
At break (5 mm/min), 60°C	ISO 527	290 MPa
At break (5 mm/min), 90°C	ISO 527	260 MPa
At break (5 mm/min), 120°C	ISO 527	185 MPa
At break (5 mm/min), 150°C	ISO 527	140 MPa
Elastic modulus		
Tensile (1 mm/min), 23°C	ISO 527	37000 MPa
Tensile (1 mm/min), 60°C	ISO 527	33000 MPa
Tensile (1 mm/min), 90°C	ISO 527	28000 MPa
Tensile (1 mm/min), 120°C	ISO 527	17000 MPa
Tensile (1 mm/min), 150°C	ISO 527	9500 MPa

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THERMAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Coefficient of linear thermal expansion (CLTE)		
30°C to 100°C (longitudinal)	ISO 11359	3 × 10 ⁻⁶ K ⁻¹
30°C to 100°C (transversal)	ISO 11359	25 × 10 ⁻⁶ K ⁻¹
VICAT - Softening point		
50 N (heating rate 120°C/h)	ISO 306	275 °C
HDT - Heat Deflection Temperature		
0.45 MPa	ISO 75	300 °C
1.81 MPa	ISO 75	290 °C
ELECTRICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Electrical resistivity		
surface, dry	ASTM D 257 / ASTM D4496	1E1 ohm
volume	ASTM D 257 / ASTM D4496	1E2 ohm.cm
Dielectric strength (short period)		
2 mm thickness, 23°C, dry	ASTM D 149	3 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. PAY ATTENTION! Material is prone to absorb moisture.

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 4 hours at 120 ÷ 130°C. Increase time in case of wet material. Maximum suggested moisture content: 0.08%. 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): 305-310-315-320°C.

RESIDENCE TIME

Maximum allowable residence time: 7 ÷ 8 minutes. Do not exceed this limit. Maximum number of complete shots (in the barrel) suggested: 2 ÷ 6

MELT TEMPERATURE

Suggested range of melt temperature: 320 ÷ 345°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: 150 ÷ 170°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 ÷ 0.3 m/s. The maximum rotational speed (in rpm) may be calculated by means of the following equation: $rpm = V/d * 19100$, where d is the screw diameter (mm).

INJECTION PRESSURE

Maximum advisable injection pressure at nozzle: 70 ÷ 140 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): 65 ÷ 80% of injection pressure.

CUSHION

Minimum suggested cushion: 3 ÷ 6 mm.

BACK PRESSURE

Suggested backpressure: 3 ÷ 5 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 has to be evaluated, but usually can be used, if a tight temperature control is assured, cross-section area thicknesses are adequate and cycle time is short.

VALVE GATES / SMALL GATES

Use of valve gates or small injection gates is not recommended due to risk of clogging.

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. It is advisable to use a wear-resistant steel 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.