

LARAMID K/40 HM

Compound based on Semi-aromatic polyamide (PPA). Carbon fibers. 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 (0.078in/8,700psi)	ISO 294-4	0.05 ÷ 0.20 %
Transversal (0.078in/8,700psi)	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°F	ISO 179-1eU	32.5 ft.lb/in ²
Notched, at +23°F	ISO 179-1eA	4.5 ft.lb/in ²

MECHANICAL PROPERTIES

	STANDARD	VALUE MEASURE UNITS
Tensile elongation		
At break (0.196 in/min), 23°F	ISO 527	1.0 %
At break (0.196 in/min), 60°F	ISO 527	1.1 %
At break (0.196 in/min), 90°F	ISO 527	1.2 %
At break (0.196 in/min), 120°F	ISO 527	2.3 %
At break (0.196 in/min), 150°F	ISO 527	2.5 %
Tensile strength		
At break (0.196 in/min), 23°F	ISO 527	48000 psi
At break (0.196 in/min), 60°F	ISO 527	42000 psi
At break (0.196 in/min), 90°F	ISO 527	37500 psi
At break (0.196 in/min), 120°F	ISO 527	27000 psi
At break (0.196 in/min), 150°F	ISO 527	20250 psi
Elastic modulus		
Tensile (0.04 in/min), 23°F	ISO 527	5400 kpsi
Tensile (0.04 in/min), 60°F	ISO 527	4800 kpsi
Tensile (0.04 in/min), 90°F	ISO 527	4050 kpsi
Tensile (0.04 in/min), 120°F	ISO 527	2400 kpsi
Tensile (0.04 in/min), 150°F	ISO 527	1380 kpsi

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THERMAL PROPERTIES	STANDARD	VALUE	MEASURE	UNITS
Coefficient of linear thermal expansion (CLTE)				
30°F to 100°F (longitudinal)	ISO 11359	3	$\times 10^{-6}$	K ⁻¹
30°F to 100°F (transversal)	ISO 11359	25	$\times 10^{-6}$	K ⁻¹
VICAT - Softening point				
11 lb (heating rate 250°F/h)	ISO 306	527		°F
HDT - Heat Deflection Temperature				
66 psi	ISO 75	572		°F
264 psi	ISO 75	554		°F
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)				
0.078 in. thickness, 73°F, dry	ASTM D 149	76		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 $250 \div 265^{\circ}\text{F}$. Increase time in case of damp 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): $580-590-600-610^{\circ}\text{F}$.

RESIDENCE TIME

Maximum allowable residence time: $7 \div 8$ 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: $610 \div 655^{\circ}\text{F}$. 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.

MOLD TEMPERATURE

Suggested range of mold temperature: $300 \div 340^{\circ}\text{F}$. 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 molding 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): $0.65 \div 1.00$ fps. The maximum rotational speed may be calculated by means of the following equation: $\text{rpm} = S/d \cdot 229$, where d is the screw diameter (in).

INJECTION PRESSURE

Maximum advisable injection pressure at nozzle: $70 \div 140$ MPa. Please, check on manual of injection molding machine the ratio between specific pressure (at nozzle) and hydraulic pressure (of oil).

PACKING PRESSURE

Typical suggested packing pressure (at nozzle): $65 \div 80\%$ of injection pressure.

CUSHION

Minimum suggested cushion: $0.10 \div 0.25$ in.

BACK PRESSURE

Suggested backpressure: $45 \div 70$ psi (hydraulic pressure).

REGRIND USAGE

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

HOT RUNNER MOLDS

Hot runner molds 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 fibers 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 mold.

Check the proper "Molding guide" for further details.

APPROVALS

Please, check our site or contact LATI for details.

CONTACTS

LATI Industria Termoplastici S.p.A.