

LARAMID K/40 HM

Semi-aromatic polyamide (PPA) based compound.

Carbon fibre. High tensile modulus. Very good thermal properties. Good chemical resistance. Low moisture absorption.

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	0.001 ÷ 0.002 in/in
Transversal (0.078in/8,700psi)	ISO 294-4	0.001 ÷ 0.002 in/in
Moisture absorption (in air)		
after 24hrs	ISO 62-4	0.16 %
MECHANICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
CHARPY impact strength		
Unnotched, at +73°F	ISO 179-1eU	28.04 ft.lb/in ²
Notched, at +73°F	ISO 179-1eA	3.74 ft.lb/in ²
Tensile elongation		
At break (0.196 in/min), 73°F	ISO 527 (1)	0.8 %
At break (0.196 in/min), 140°F	ISO 527 (1)	1.0 %
At break (0.196 in/min), 195°F	ISO 527 (1)	1.3 %
At break (0.196 in/min), 250°F	ISO 527 (1)	2.0 %
At break (0.196 in/min), 300°F	ISO 527 (1)	3.5 %
Tensile strength		
At break (0.196 in/min), 73°F	ISO 527 (1)	42000 psi
At break (0.196 in/min), 140°F	ISO 527 (1)	38400 psi
At break (0.196 in/min), 195°F	ISO 527 (1)	35500 psi
At break (0.196 in/min), 250°F	ISO 527 (1)	27600 psi
At break (0.196 in/min), 300°F	ISO 527 (1)	20300 psi
Elastic modulus		
Tensile (speed 0.04 in/min), at 73°F	ISO 527 (1)	5220 kpsi
Tensile (speed 0.04 in/min), at 140°F	ISO 527 (1)	4640 kpsi
Tensile (speed 0.04 in/min), at 195°F	ISO 527 (1)	3920 kpsi
Tensile (speed 0.04 in/min), at 250°F	ISO 527 (1)	2900 kpsi
Tensile (speed 0.04 in/min), at 300°F	ISO 527 (1)	1740 kpsi

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THERMAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Coefficient of linear thermal expansion (CLTE)		
+86°C to +212°F (longitudinal)	ISO 11359-2	1 µin/(in·°F)
+86°C to +212°F (transversal)	ISO 11359-2	3 µin/(in·°F)
VICAT - Softening point		
11 lb (heating rate 122°F/h)	ISO 306	527 °F
HDT - Heat Deflection Temperature		
66 psi	ISO 75	554 °F
264 psi	ISO 75	536 °F
C.U.T. - Continuous Use Temperature		
Long period (20,000h)	ASTM E1641/E1877	302 °F
ELECTRICAL PROPERTIES	STANDARD	VALUE MEASURE UNITS
Electrical resistivity		
Surface	ASTM D 257	1E1 ohm
Volume	ASTM D 257	1E2 ohm.cm

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MATERIAL - STORAGE

Sealed, undamaged packages has to be kept in dry storage facilities, providing they are also able to protect them from weather and accidental damages.

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

At least 3 hours at 248 ÷ 266°F

These are the suggested conditions to reduce the moisture content to adequate levels. Temperature and drying time can be reduced by using vacuum ovens

ACTUAL MELT TEMPERATURE

590 ÷ 644°F

The injection molding machine settings needed to obtain the suggested melt temperature will depend greatly on shot size and machine capacity, as well as other molding parameters such as: injection speed, screw RPM, back pressure, etc. 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

302 ÷ 338°F

The mold temperature suggested above is the actual tool steel temperature. 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.

INJECTION SPEED

Medium

The advisable injection speed greatly depends on cavity geometry and injection molding machine size. The use of high injection speed can improve the surface appearance, but it can also cause outgassing and burn marks due to overheating through shear stress.

REGRIND USAGE

The use of regrind is possible, but should be assessed on the basis of the project, moulding parameters, and type of grinding used. The effect of using regrind on material properties must be evaluated by the customer on its specific project and process. High percentages of regrind may cause a reduction in viscosity and fibre length, reducing mechanical properties, first resilience.

HOT RUNNER MOLDS

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

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TO AVOID

Shut-off nozzles and internally heated hot runners have to be avoided. In order to prevent any material degradation, over-dimensioned machines should be avoided.

NOTES

The products mentioned herein are not suitable for applications in contact with foodstuff 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.

CONTACTS

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Values shown are based on testing of injection moulded laboratory test specimens, conditioned according to the standard and represent data that fall within the standard range of properties for non-coloured material, if not otherwise specified. As they may be subject to variations, these values do not represent a sufficient basis for any part design and are not intended for use in establishing values for specification purposes. Properties of moulded parts can be influenced by a wide range of factors including, but not limited to, colorants, part design, processing conditions, post-treatment conditions, environmental conditions and usage of regrind during the moulding process. If data are explicitly indicated as provisional, range of properties has to be considered wider. This information and technical assistance are provided as a convenience for informational purposes only and are subject to change without notice. The customer shall always ensure that the latest release of technical information is at his own disposal. Lati S.p.A. extends no warranties or guarantee, including a warranty of merchantability of whatever use is made of the product, and make no representations as to the accuracy, suitability, reliability, completeness and sufficiency of the information provided, and assume no responsibility regarding the consequences of its use or for any printing errors. It is the customer's responsibility to inspect and test our products in order to determine to his own satisfaction whether they are suitable for his intended uses and applications or used in conjunction with third-party materials. This application-specific analysis shall at least include preliminary testing to determine the suitability for the customer's particular purpose from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us as the manner in which the customer uses and the purpose to which utilises our products are beyond our control. Lati S.p.A. does not accept and hereby disclaims liability for any damages whatsoever in connection with the use of or reliance on this information. No one is authorised to make any warranties, issue any immunities or assume any liabilities on behalf of Lati S.p.A. except in a writing signed by a specifically authorised Lati S.p.A. executive. Unless otherwise agreed in writing, the exclusive remedy for all claims is replacement of the product or refund of the purchase price at Lati's option, and in no event shall Lati S.p.A. be liable for special, consequential, incidental, punitive or exemplary damages. No information herein can be considered as a suggestion to use any product in conflict with intellectual property rights. Lati S.p.A. disclaims any liability that may be claimed for infringement or alleged infringement of patents. Unless specifically stated in writing, the products mentioned herein are not suitable for applications in the pharmaceutical, medical or dental sector, in contact with foodstuff or for potable water transportation. For any other issues Lati S.p.A. Conditions of Sales apply.