Celanese
The chemistry inside innovation™

NILAMID XT1 HH GF50 BK 9005/C - PPA

Description

PPA, 50% glass fiber reinforced, high rigidity and creep resistance, high heat & hydrolysis stability
NILAMID XT1 compounds are designed for engineering applications requiring a maximum service temperature higher than that of standard polyamides. The most relevant characteristics are the following: High stiffness and strength at elevated temperatures Excellent creep behavior Small influence on mechanical properties after moisture uptake Good dimensional stability Low warpage

Physical properties	dry / cond	Unit	Test Standard
Density	**1640** / **-**	kg/m³	ISO 1183
Molding shrinkage, parallel	**0.2**	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.5**	%	ISO 294-4, 2577
Humidity absorption, 23°C/50%RH	**0.15** / *	%	ISO 62

Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	**18500** / **18000**	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	**270** / **240**	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	**2** / **2.2**	%	ISO 527-2/1A
Flexural modulus, 23°C	**16000** / **15500**	MPa	ISO 178
Flexural stress at max. force	**400** / **370**	MPa	ISO 178
Charpy impact strength, 23°C	**80** / **-**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**78** / **-**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**10.5** / **-**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**9.5** / **-**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**11** / **-**	kJ/m²	ISO 180/1A

Thermal properties	dry / cond	Unit	Test Standard
Melting point, peak	**322**	°C	ISO 3146
DTUL at 1.8 MPa	**280** / *	°C	ISO 75-1, -2
Flammability @3.2mm nom. thickn.	**HB** / *	class	UL 94
Flammability @1.6mm nom. thickn.	**HB** / *	class	UL 94
Flammability @0.8mm nom. thickn.	**HB** / *	class	UL 94
Flammability @0.4mm nom. thickn.	**HB** / *	class	UL 94
Continuous service temperature	**150** / *	°C	DIN/IEC 60216-1

Electrical properties	dry / cond	Unit	Test Standard
Volume resistivity	**1E13** / **-**	Ohm*m	IEC 60093
Electric strength	**22** / **-**	kV/mm	IEC 60243-1
Comparative tracking index	**600** / **-**	-	IEC 60112

Other text information

Injection Molding Preprocessing

NILAMID XT1 compound is supplied in moisture-proof packaging. The maximum moisture content allowed for the process of injection molding is 0.10%, but to get the maximum performance and reduce possible degradation phenomena is recommended molding with a moisture content <0.08%. The drying time depends on the initial moisture content and the drying conditions used. Typically 4-6h hours at 120C with dry air (dew point of <-30C) are sufficient for the material stored in unopened packs or with moisture content <0.20-0.25%.

Injection molding

The following conditions apply to the normal injection molding process of NILAMID XT1. Machine temperatures: barrel 310-325C, nozzle and hot runners 325-340C. Mold temperatures: >135C. Back pressure: typically <5 bar (hydraulic pressure). Temperatures exceeding 340C and long residence time could lead to degradation and brittleness of the material. In case of gas generation in the melt, please verify moisture content and processing temperatures. Usage of regrind is possible depending on the molded part characteristics. For further details, please contact our technical support team.

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Injection Molding Postprocessing

Parts made by NILAMID XT1 compound, do not change significantly their performance depending on the moisture uptake. Normally, a conditioning cycle is not necessary. After molding, with favorable environmental conditions, a piece can absorb moisture up to 0,1-0,2% in 24h and reach the equilibrium during its lifetime. The post-treatment of the parts may include annealing at 130-140C in the oven, up to four hours. This treatment is useful to relax any internal stress.

General Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer’s current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products. The products mentioned herein are not intended for use in medical or dental implants.

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