

CELANYL® XS3 GF40 TF10 NC 1102/A - PA*
Description

(NILAMID XS3 GF40 TF10 NC 1102/A)

Semi-aromatic polyamide blend, 40% glass fibre, with PTFE

Compound designed for tribological systems with high mechanical requirements, typically used to replace metal due to the high stiffness and strength, stable after conditioning. It shows better creep behavior and dimensional stability vs. an equivalent PA66 grade, with lower warpage and excellent surface finish.

Physical properties	Value	Unit	Test Standard
Density	96.8	lb/ft ³	ISO 1183
Molding shrinkage, parallel (flow)	0.1 - 0.2	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	0.4 - 0.5	%	ISO 294-4, 2577
Water absorption, 23°C-sat	4.1	%	Sim. to ISO 62
Humidity absorption, 23°C/50%RH	1.1	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	1.89E6/-	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	29000/-	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	3/-	%	ISO 527-1, -2
Flexural modulus, 23°C	1.6E6/-	psi	ISO 178
Charpy impact strength, 23°C	38.1/-	ft-lb/in ²	ISO 179/1eU
Charpy impact strength, -30°C	38.1/-	ft-lb/in ²	ISO 179/1eU
Charpy notched impact strength, 23°C	6.66/-	ft-lb/in ²	ISO 179/1eA
Charpy notched impact strength, -30°C	6.42/-	ft-lb/in ²	ISO 179/1eA
Izod impact notched, 23°C	5.23/-	ft-lb/in ²	ISO 180/1A

Thermal properties	Value	Unit	Test Standard
Melting temperature, 20°C/min	500	°F	ISO 11357-1/-3
DTUL at 1.8 MPa	446	°F	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

Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23°C	1E12/-	Ohm*m	IEC 62631-3-1
Surface resistivity, 23°C	1E13/-	Ohm	IEC 62631-3-2
CTI 50 drops	600	V	IEC 60112

Other text information
Injection Molding Preprocessing

XS compounds, stored in a moisture-proof packaging, can be processed without drying; however, it is always recommended drying the product that comes from a large package (e.g. Octabin). The suggested moisture content for the process of injection molding is less than 0.15% for grades with low percentage of reinforcement; for grades with high percentage of fiber and to achieve the best surface quality, the moisture content should be lower than 0.10% . Flame retardant grades must be processed with a maximum moisture content of 0,10%. The drying time depends on the initial moisture content and the drying conditions. Typically 4-8 hours at 80-90C using dehumidified air (dew point of -20C) are suitable conditions for a starting moisture content of 0.20%-0.40%.

Injection molding

The following conditions apply to a standard injection moulding process of XS compounds. Machine temperatures: barrel 265-290C, nozzle and hot runners up to 300C (up to 290C products with flame retardants). Mould temperatures: 80-100C, (80-120C highly reinforced grades). Back pressure: typically 5-10 bar (hydraulic pressure). Temperatures exceeding 300C 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 moulded part characteristics. For further details, please refer to the document 'Instructions for injection moulding' or contact our technical support team.



Injection Molding Postprocessing

Part moulded with XS compounds reach their final performance with a water content of about 1,0% by weight, depending on the grade. This percentage corresponds to the point of equilibrium between the rates of absorption and desorption of moisture. After moulding, in favourable environmental conditions, a part can quickly absorb moisture up to 0,3-0,5%, while the equilibrium will be reached during its life. Post-treatments of parts may also include the annealing (80-120C in oven, up to four hours). This procedure can be useful to relax any internal stresses.

Characteristics

Special Characteristics	Heat resistant, High gloss, Improved creep, Low warpage, Wear resistant
Product Categories	Glass reinforced, Tribological
Processing	Injection molding

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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