Celanese
The chemistry inside innovation™

NILAMID XS3 S GF60 BK 9005/A/UV - PA*

Description

Semi-aromatic polyamide blend, 60% glass fibre, UV resistant
XS compounds are designed for injection molding of parts with a high standard of technical requirements. The most relevant characteristics are the following: High stiffness and strength; small influence on mechanical properties after water uptake Good creep behavior Excellent surface finish Good dimensional stability Low warpage

Physical properties	dry / cond	Unit	Test Standard
Density	**107** / **-**	lb/ft³	ISO 1183
Molding shrinkage, parallel	**0.1**	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.3**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**3.8** / *	%	ISO 62
Humidity absorption, 23°C/50%RH	**0.4** / *	%	ISO 62

Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	**3.12E6** / **2.61E6**	psi	ISO 527-2/1A
Tensile stress at break, 5mm/min	**34800** / **28300**	psi	ISO 527-2/1A
Tensile strain at break, 5mm/min	**2.5** / **2.9**	%	ISO 527-2/1A
Flexural modulus, 23°C	**2.68E6** / **2.32E6**	psi	ISO 178
Flexural stress at max. force	**50800** / **38400**	psi	ISO 178
Charpy impact strength, 23°C	**33.3** / **35.7**	ft-lb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	**5.47** / **6.18**	ft-lb/in²	ISO 179/1eA
Izod impact notched, 23°C	**5.71** / **6.66**	ft-lb/in²	ISO 180/1A

Thermal properties	dry / cond	Unit	Test Standard
Melting point, peak	**455**	°F	ISO 3146
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
Continuous service temperature	**120** / *	°C	DIN/IEC 60216-1

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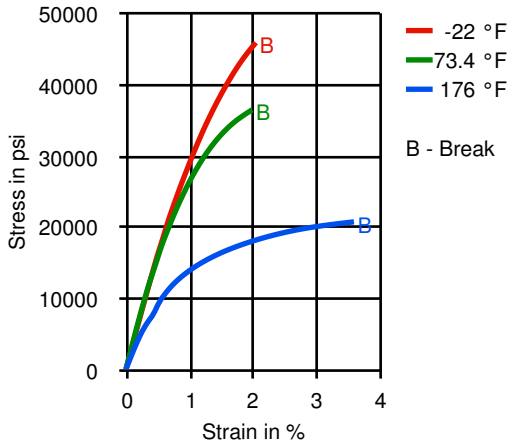
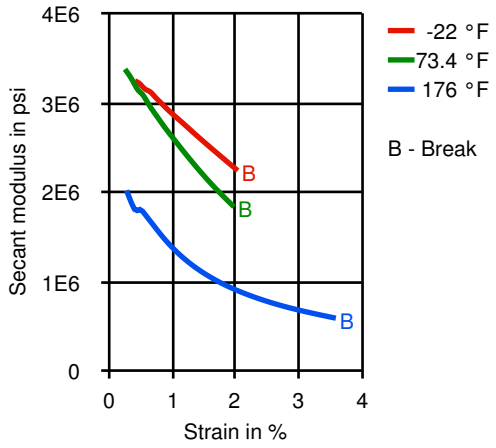
Diagrams

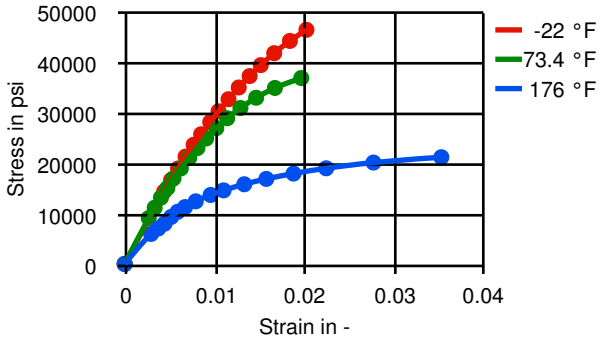
Stress-strain



Secant modulus-strain



True Stress-strain



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 absorbs 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.