Celanese
The chemistry inside innovation™

CELANYL® XS3 GF50 BK 9005/V/FA

Semi-aromatic polyamide blend, 50% glass fibre, heat stabilized.
Compound designed for parts 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. Suitable for drinking water applications.

Product information

Part Marking Code	(PA66+PA6I/6T)-GF50		ISO 11469

Rheological properties

Moulding shrinkage range, parallel	0.1 - 0.4	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.4 - 0.6	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	17500 / 16500	MPa	ISO 527-1/-2
Stress at break, 5mm/min	240 / 210	MPa	ISO 527-1/-2
Strain at break, 5mm/min	2.8 / 3	%	ISO 527-1/-2
Flexural Modulus	16000 / 14000	MPa	ISO 178
Charpy impact strength, 23°C	100 / 95	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	95 / -	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	13 / 14	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	11 / -	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	13 / 15	kJ/m²	ISO 180/1A

Thermal properties

Melting temperature, 10°C/min	260	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	235	°C	ISO 75-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	UL 94
Thickness tested	1.6	mm	UL 94
Burning Behav. at thickness h	HB	class	UL 94
Thickness tested	0.4	mm	UL 94
UL recognition	yes		UL 94

Electrical properties

	dry/cond.		
Volume resistivity	1E12 / -	Ohm.m	IEC 62631-3-1
Surface resistivity	1E13 / -	Ohm	IEC 62631-3-2
Electric strength	32 / -	kV/mm	IEC 60243-1
Relative permittivity, printed circuits and boards, 2.5 GHz	4.09		IEC 61189-2-721
Dissipation factor, printed circuits and boards, 2.5 GHz	0.0118	E-4	IEC 61189-2-721

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Other properties

Humidity absorption, 2mm	1	%	Sim. to ISO 62
Water absorption, 2mm	3.5	%	Sim. to ISO 62
Density	1580	kg/m³	ISO 1183

Additional information

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.

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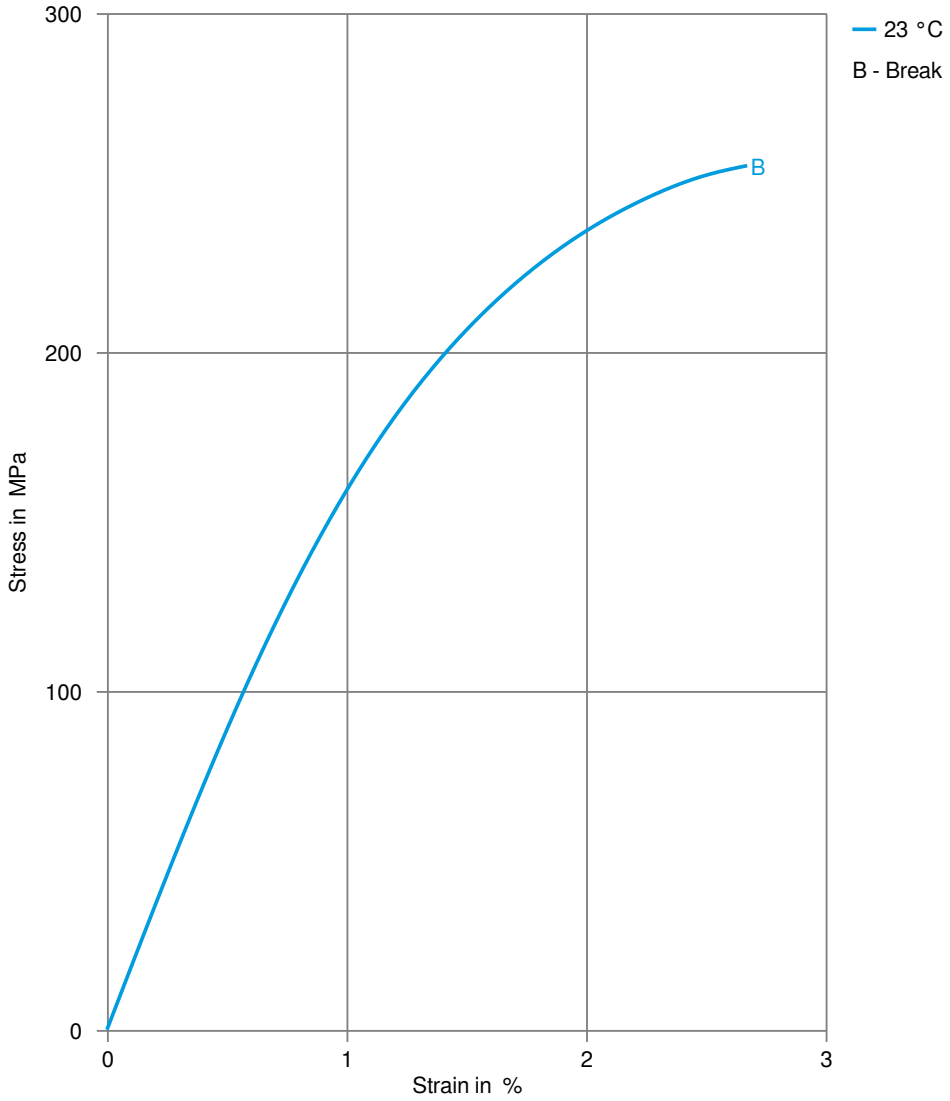
Stress-strain (dry)



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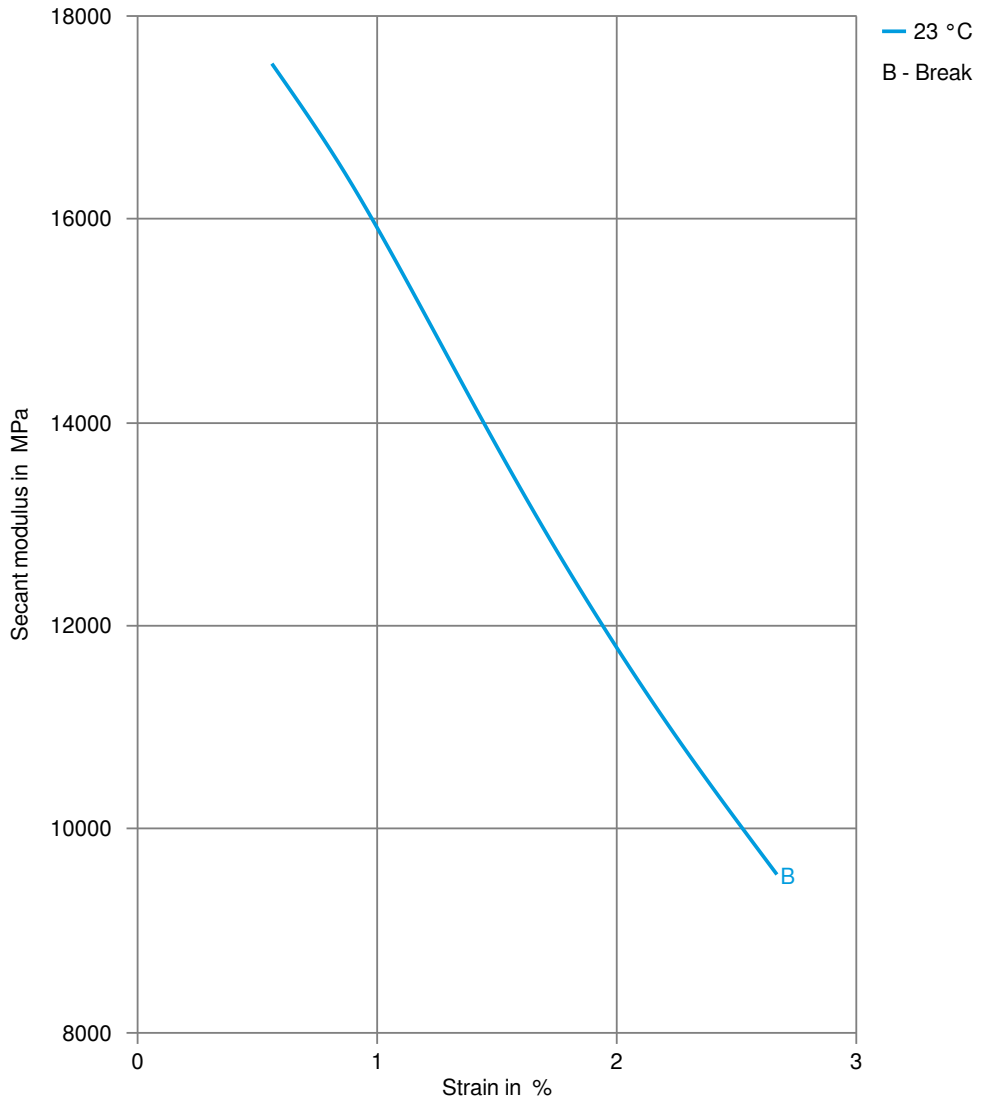
Secant modulus-strain (dry)



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Processing Texts

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 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 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.