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Zytel® HTNFR51G35L NC010

HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTNFR51G35L NC010 is a 35% Glass Reinforced, Flame Retardant, PPA, High Performance Polyamide

Product information

Resin Identification	PA6T/XT-GF35FR(17)	ISO 1043
Part Marking Code	>PA6T/XT-GF35FR(17)<	ISO 11469
ISO designation	ISO 16396-PA6T/XT,GF35 FR(17),M1F1GNR,S10-140	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.6 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	14000 / 14000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	170 / 130	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.5 / 1.1	%	ISO 527-1/-2
Flexural modulus	12000 / 12000	MPa	ISO 178
Flexural strength	250 / 240	MPa	ISO 178
Compressive strength	293 / -	MPa	ISO 604
Charpy impact strength, 23°C	40 / 30	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	35 / 30	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	11 / -	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	13 / -	kJ/m²	ISO 179/1eA
Poisson's ratio	0.33 / 0.33		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	300 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	140 / 90	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	260 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	270 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	20 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	18 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	46 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	50 / *	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.25	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2400	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	150	°C	UL 746B
RTI, electrical, 1.5mm	150	°C	UL 746B
RTI, electrical, 3.0mm	150	°C	UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	125	°C	UL 746B
RTI, impact, 3.0mm	130	°C	UL 746B
RTI, strength, 0.75mm	130	°C	UL 746B
RTI, strength, 1.5mm	140 / *	°C	UL 746B

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RTI, strength, 3.0mm	150	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.81 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	38 / *	%	ISO 4589-1/-2
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.9 / -		IEC 62631-2-1
Relative permittivity, 1MHz	3.6 / -		IEC 62631-2-1
Dissipation factor, 100Hz	80 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150 / -	E-4	IEC 62631-2-1
Volume resistivity	>1E13 / 1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Electric strength	34 / 34	kV/mm	IEC 60243-1
Comparative tracking index	500 / -		IEC 60112
Comparative tracking index M	200 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1 / *[A]	%	Sim. to ISO 62
Water absorption, 2mm	2.6 / *[A]	%	Sim. to ISO 62
Density	1650 / -	kg/m³	ISO 1183
Density of melt	1480	kg/m³	

[A]: Assessed

Injection

Drying Recommended	yes	
Drying Temperature	100	°C
Drying Time, Dehumidified Dryer	6 - 8	h
Processing Moisture Content	≤0.1	%
Melt Temperature Optimum	325	°C
Min. melt temperature	320	°C
Max. melt temperature	330	°C
Mold Temperature Optimum	150	°C
Min. mould temperature	140	°C
Max. mould temperature	180	°C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant

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Special characteristics	Flame retardant, Lead-free soldering resistant

Additional information

Injection molding	During molding, use proper protective equipment and adequate ventilation. Avoid exposure to fumes and limit the hold up time and temperature of the resin in the machine. Purge degraded resin carefully with HDPE. When lower mold temperatures are used, the initial warpage and shrinkage may be lower, but the surface appearance and chemical resistance may be reduced, and the dimensional change may be greater when parts are subsequently heated.

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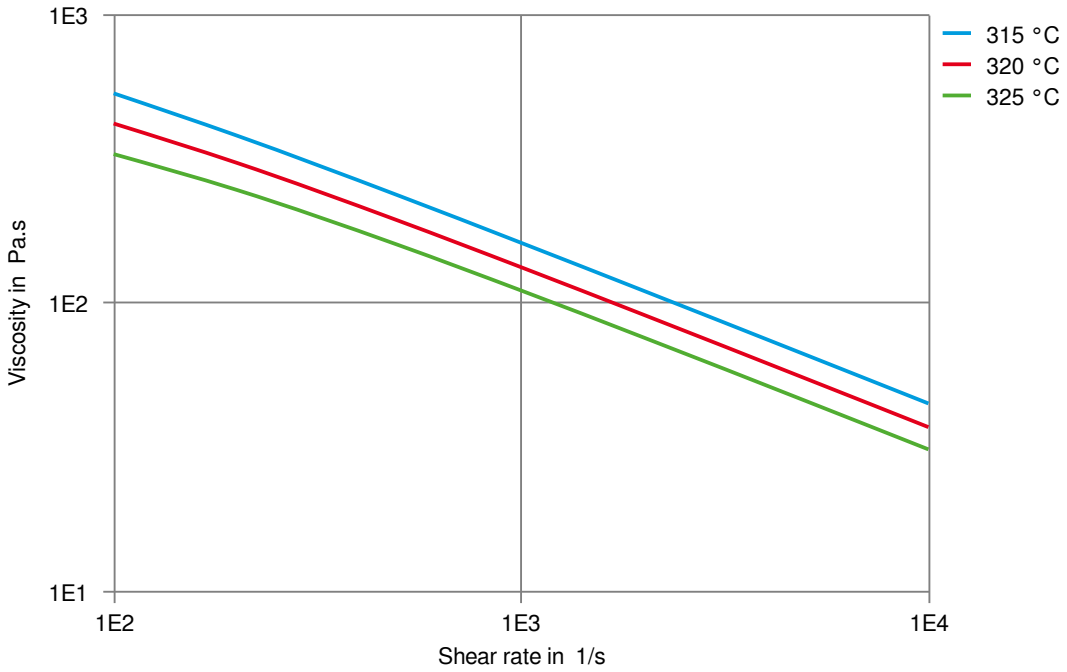
Viscosity-shear rate



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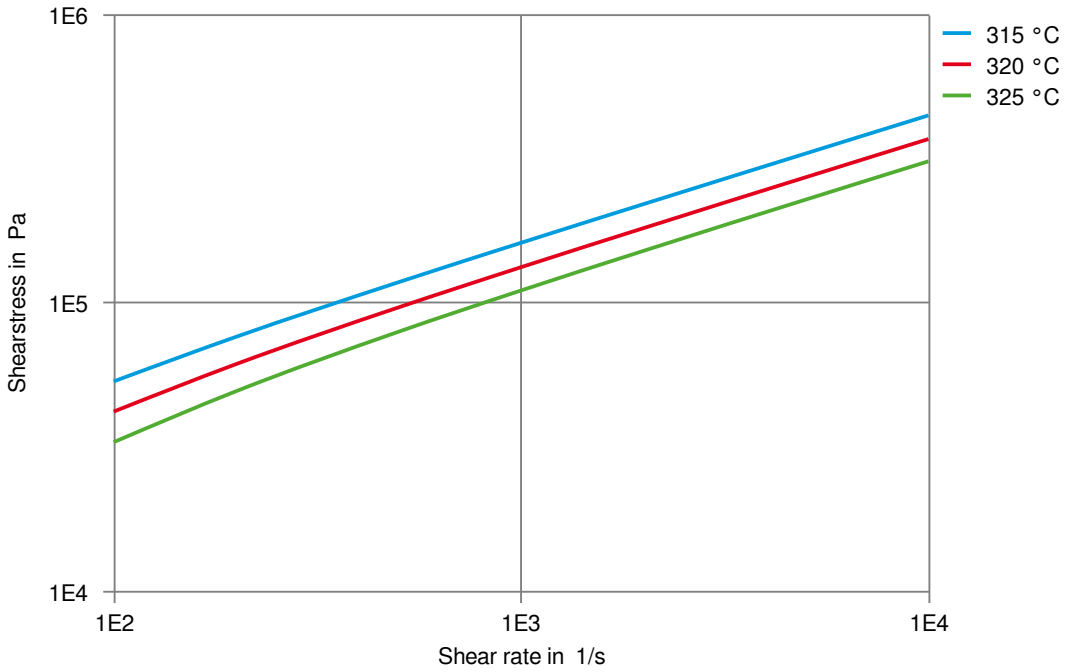
Shearstress-shear rate



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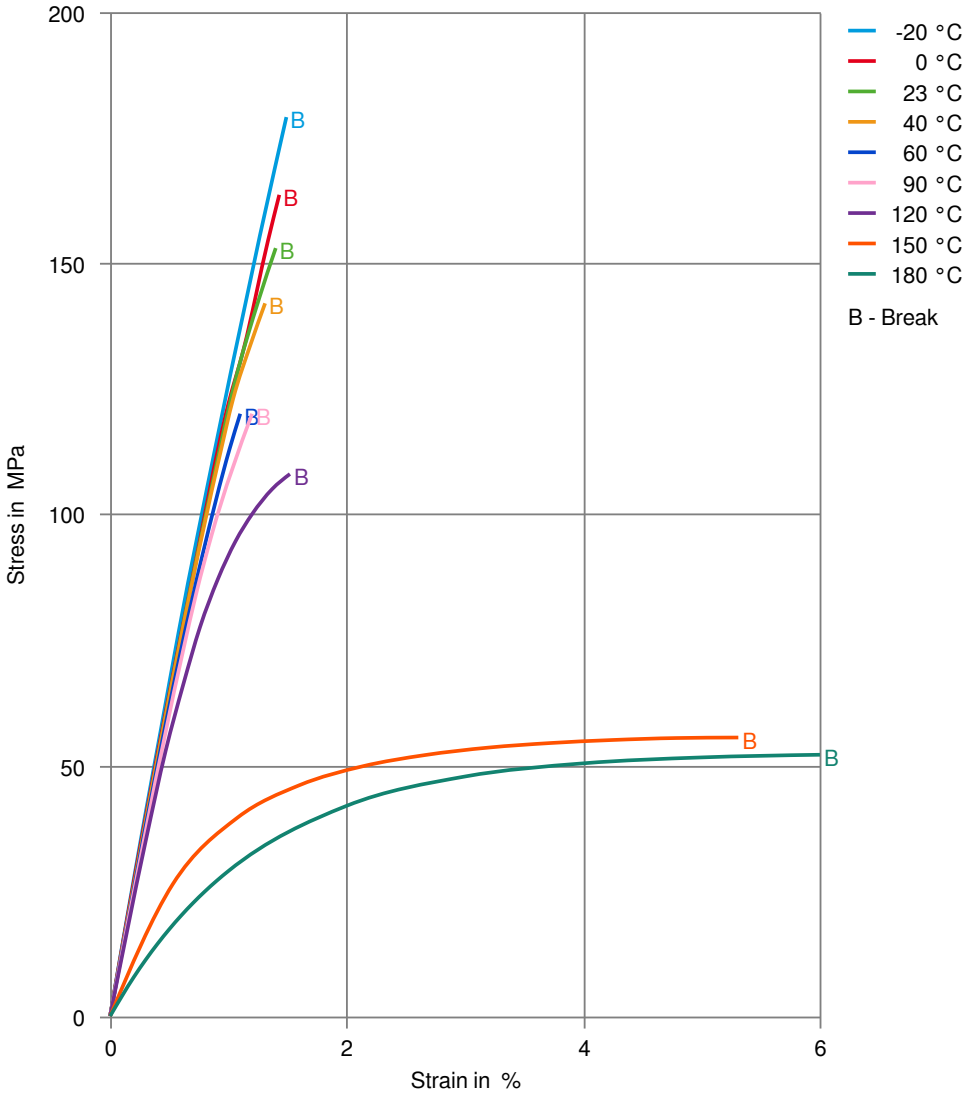
Stress-strain (dry)



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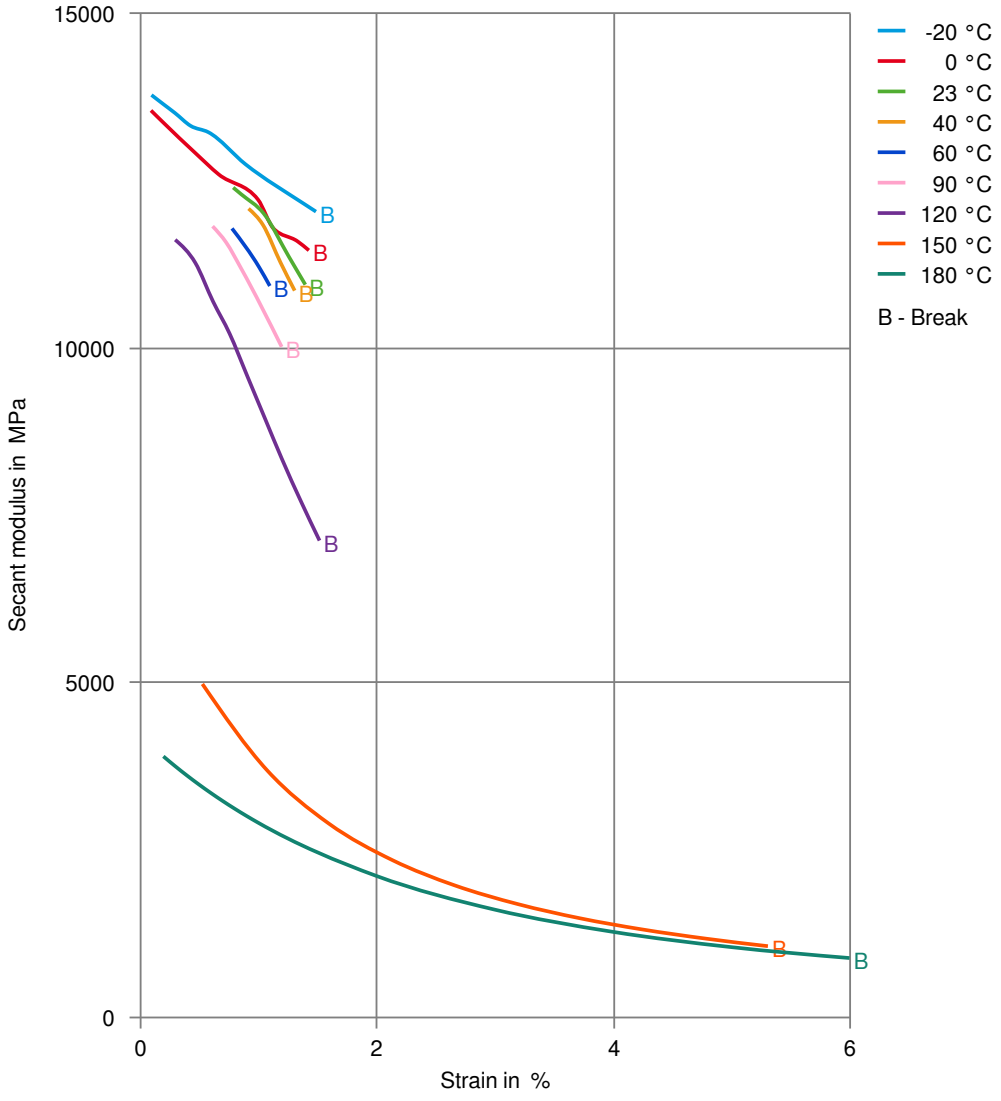
Secant modulus-strain (dry)



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Chemical Media Resistance

Other

- ✔ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ Water, 23°C
- ✔ Water, 90°C
- ✔ Coolant Glysantin G48, 1:1 in water, 125°C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

Revised: 2025-04-23 Source: Celanese Materials Database