Celanese
The chemistry inside innovation™

Zytel® HTN51G35HSLR BK420

HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTN high performance polyamide resins feature high retention of properties upon exposure to elevated temperature, to high moisture and to harsh chemical environments. Polymer families and grades of Zytel® HTN are tailored to optimize performance as well as processability.

Typical applications with Zytel® HTN include demanding applications in the automotive, electrical and electronics, domestic appliances, and construction industries.

Zytel® HTN51G35HSLR BK420 is a 35% glass reinforced, heat stabilised, lubricated, hydrolysis resistant high performance polyamide resin. It is also a PPA resin.

Product information

Resin Identification	PA6T/XT-GF35	ISO 1043
Part Marking Code	>PA6T/XT-GF35<	ISO 11469
Part Marking Code	>PPA-GF35<	SAE J1344
ISO designation	ISO 16396-PA6T/XT,GF35,M1CGHRW,S10-120	

Rheological properties

	dry/cond.		
Melt volume-flow rate	19 / *	cm^3/10min	ISO 1133
Temperature	325 / *	°C	
Load	2.16 / *	kg	
Melt mass-flow rate	21 / *	g/10min	ISO 1133
Melt mass-flow rate, Temperature	325 / *	°C	
Melt mass-flow rate, Load	2.16 / *	kg	
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	12000 / 12000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200 / 190	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.3 / 2	%	ISO 527-1/-2
Flexural modulus	10500 / -	MPa	ISO 178
Charpy impact strength, 23°C	50 / 40	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	9 / 8	kJ/m^2	ISO 179/1eA
Ball indentation hardness, H 961/30	310 / -	MPa	ISO 2039-1
Poisson's ratio	0.33 / 0.33		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	300 / *	°C	ISO 11357-1/-3
Melting temperature, first heat	300 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	140 / 95	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	262 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	276 / *	°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	20 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	55 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	58 / *	E-6/K	ISO 11359-1/-2

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Specific heat capacity of melt	1820	J/(kg K)	ISO 22007-4
Specific heat capacity solid	610[DS]	J/(kg K)	ISO 22007-4
TGA curve	available		ISO 11359-1/-2

[DS]: Derived from similar grade

Flammability

FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	28	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Volume resistivity	1E13 / -	Ohm.m	IEC 62631-3-1
Electric strength	34 / 33	kV/mm	IEC 60243-1

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.4 / *	%	Sim. to ISO 62
Water absorption, 2mm	4 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	1 / *	%	Sim. to ISO 62
Density	1470 / -	kg/m³	ISO 1183

VDA Properties

Odour	4	class	VDA 270

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[1]	°C
Max. mould temperature	180	°C

[1]: Higher temperature needed for thinner sections.

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Heat stabilised or stable to heat, Hydrolysis resistant

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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.

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Ford	WSS-M4D861-A3	
General Motors	GMW16360P-PPA-GF35	
Mercedes-Benz	DBL5406.00 PPA GF30	
Mercedes-Benz	DBL5406.10 PA66 GF30	
Mercedes-Benz	DBL5408.65 PPA GF35	
Mercedes-Benz	DBL5409.25 PA66 GF35	
Renault-Nissan	UB09a, No Spec, Special Part Approval, See Your CE Account Manager.	
Stellantis	B62 0300 / 61/225E/218M/H412(G48)/C1	Technical Black
Stellantis	MS.50156 / PPA.GF30-35.10000T.7C.HS.GR-ICE	CPN4696, 01378_21_03570
Stellantis - Chrysler	MS.50103 / CPN-4696	Black

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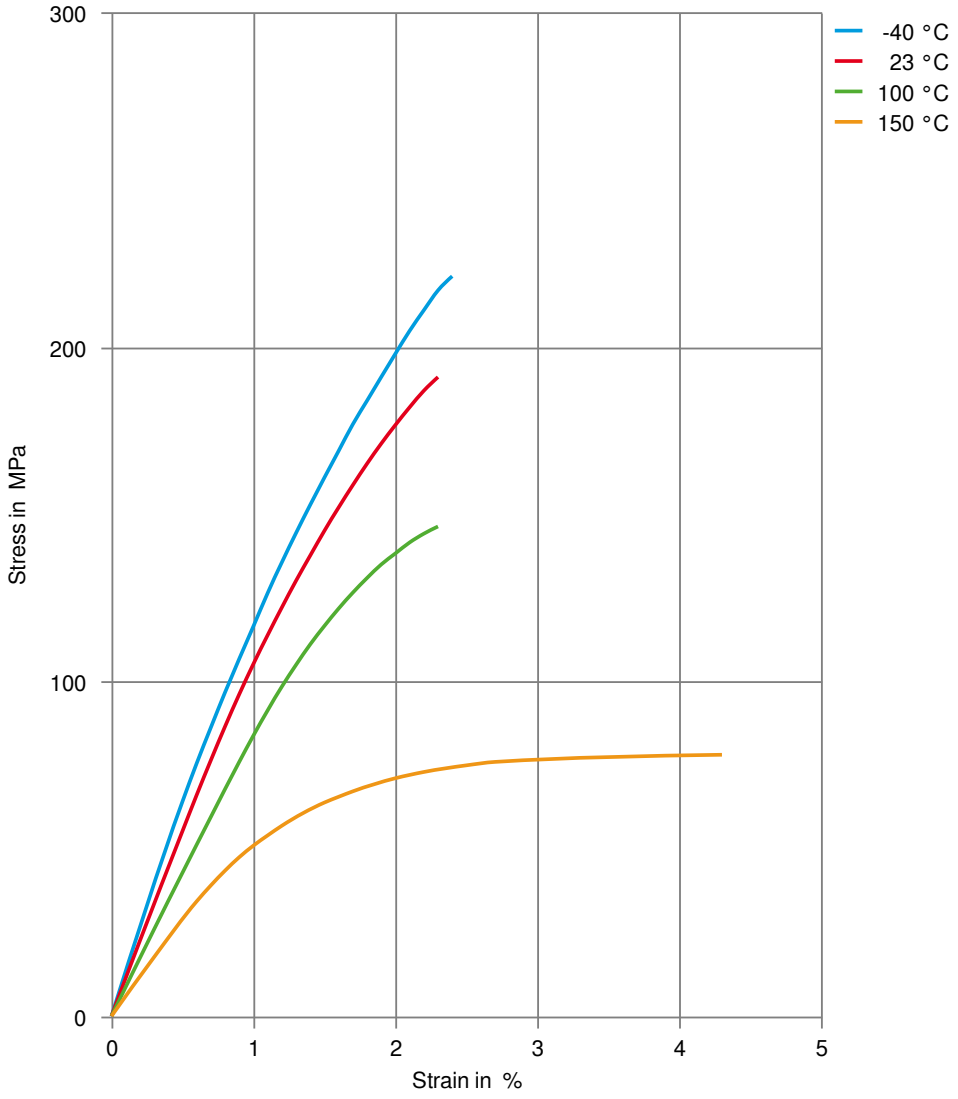
Stress-strain (dry)



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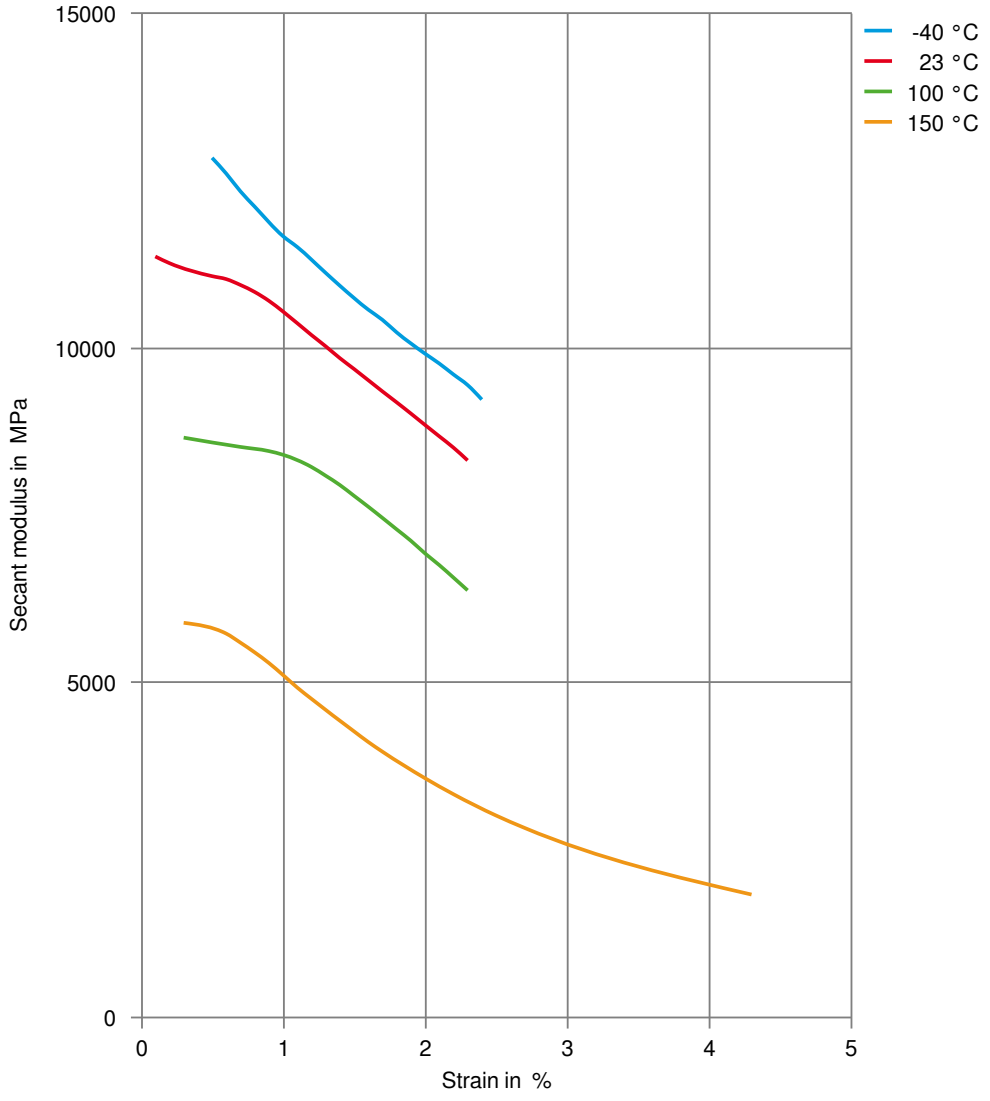
Secant modulus-strain (dry)



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Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✔ Insulating Oil, 23°C

Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), >90°C
- ✔ Diesel EN 590, 100°C

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).

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. Colourants or other additives may cause significant variations in data values. Properties of moulded 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. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, 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.
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