Zytel® HTN52G35HSL BK083

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® HTN52G35HSL BK083 is a 35% glass reinforced, heat stabilized, lubricated high performance polyamide resin that can be molded in water heated molds. It is also a PPA resin.

Product information

Resin Identification	PA6T/66-GF35	ISO 1043
Part Marking Code	>PA6T/66-GF35<	ISO 11469
Part Marking Code	>PPA-GF35<	SAE J1344
ISO designation	ISO 16396-PA6T/66,GF35,M1CGHR,S10-120	

Rheological properties

	dry/cond.		
Viscosity number	110/*[1]	cm³/g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.9/-	%	ISO 294-4, 2577

[1]: formic acid 90%

Typical mechanical properties

	dry/cond.		
Tensile Modulus	12000/12000	MPa	ISO 527-1/-2
Stress at break	200/180	MPa	ISO 527-1/-2
Strain at break	2.3/2.6	%	ISO 527-1/-2
Flexural Modulus	10300/10300	MPa	ISO 178
Charpy impact strength, 23°C	45/-	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	40/35	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	9/9	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	7/6	kJ/m²	ISO 179/1eA
Poisson's ratio	0.33/0.33	-	

Thermal properties

	dry/cond.		
Melting temperature, first heat	310/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	90/45	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.8 MPa	285/*	°C	ISO 75-1/-2
CLTE, Parallel, -40-23°C	21/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	21/*	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 55-160°C	11/*	E-6/K	ISO 11359-1/-2
CLTE, Normal, -40-23°C	61/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	67/*	E-6/K	ISO 11359-1/-2

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Coeff. of linear therm. expansion, Normal, 55-160°C	80/*	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	150	°C	UL 746B
RTI, electrical, 1.5mm	150	°C	UL 746B
RTI, electrical, 3mm	150	°C	UL 746B
RTI, impact, 0.75mm	125	°C	UL 746B
RTI, impact, 1.5mm	125	°C	UL 746B
RTI, impact, 3mm	125	°C	UL 746B
RTI, strength, 0.75mm	130	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3mm	150	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*	-	UL 94
Burning Behav. at thickness h	HB/*	class	IEC 60695-11-10
Thickness tested	0.75/*	mm	IEC 60695-11-10
UL recognition	yes/*	-	UL 94
Glow Wire Flammability Index, 0.75mm	750/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	700/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	850/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	775/-	°C	IEC 60695-2-13
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	44	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
Comparative tracking index	600/-	-	IEC 60112

Other properties

	dry/cond.		
Humidity absorption, 2mm	2/*	%	Sim. to ISO 62
Density	1460/-	kg/m³	ISO 1183
Density of melt	1100	kg/m³	
Water Absorption, Immersion 24h	0.4/*[DS]	%	Sim. to ISO 62

[DS]: Derived from similar grade

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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
Min. mould temperature	90	°C
Max. mould temperature	110	°C

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.

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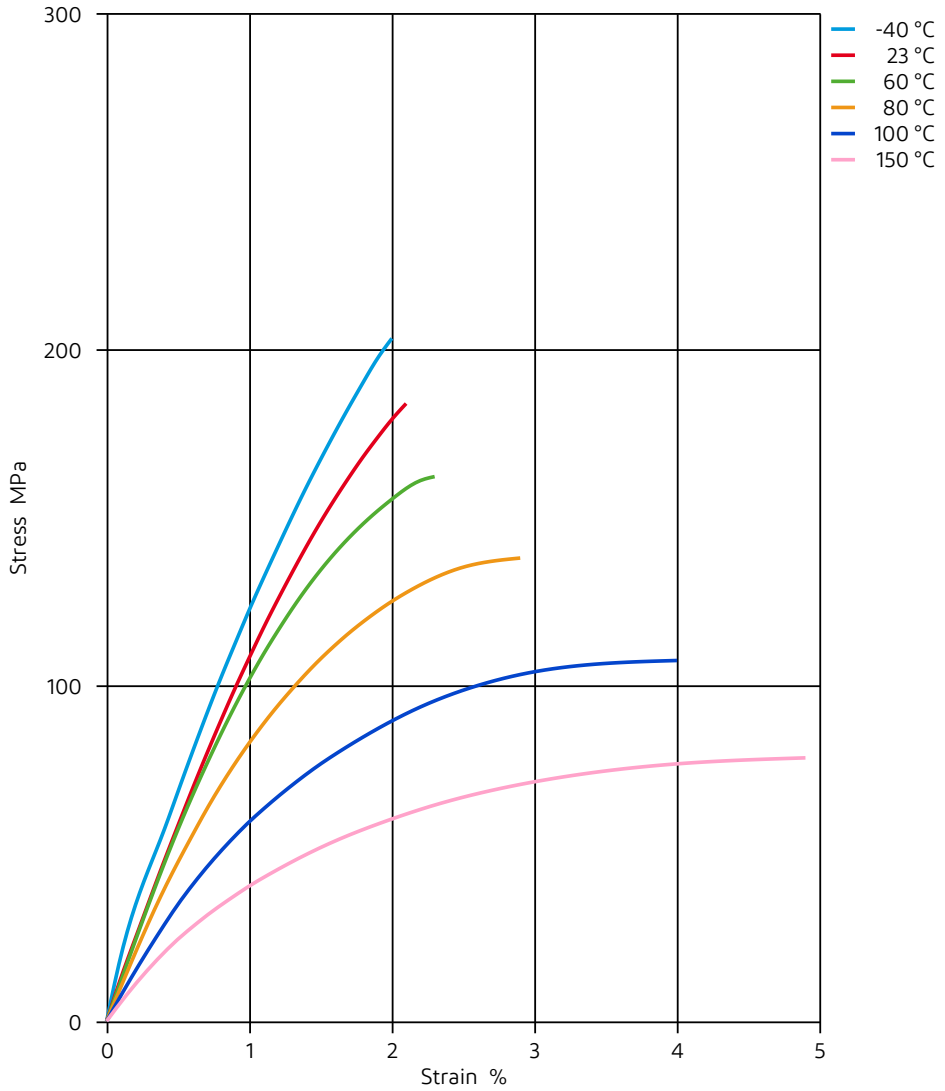
Stress-strain (dry)



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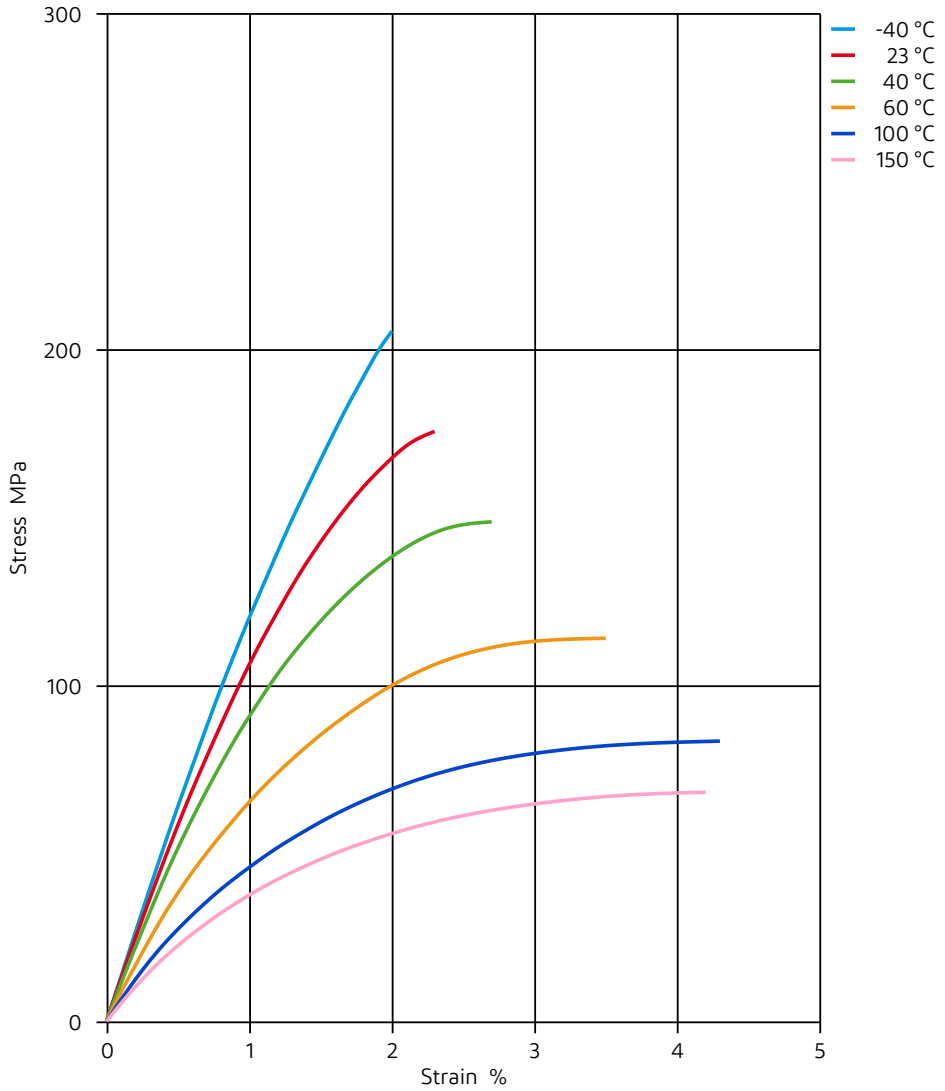
Stress-strain (cond.)



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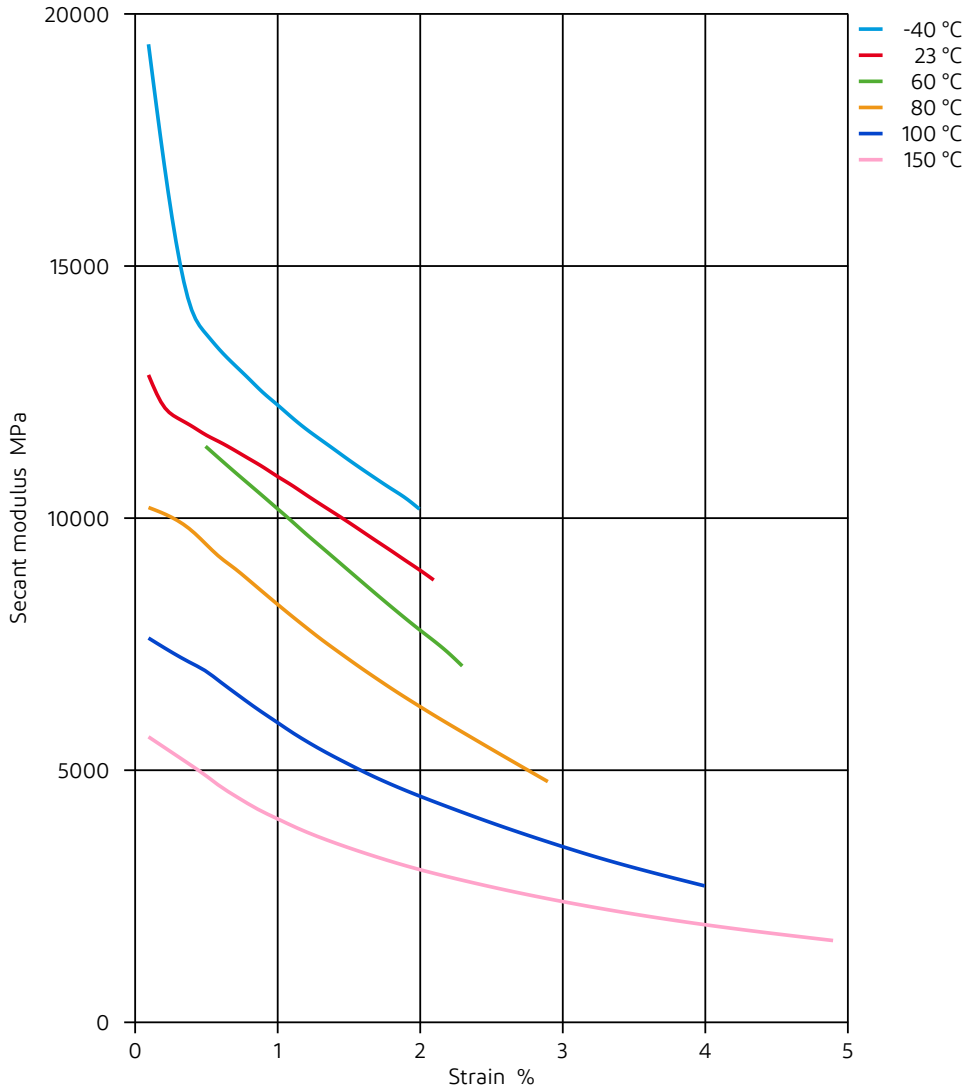
Secant modulus-strain (dry)



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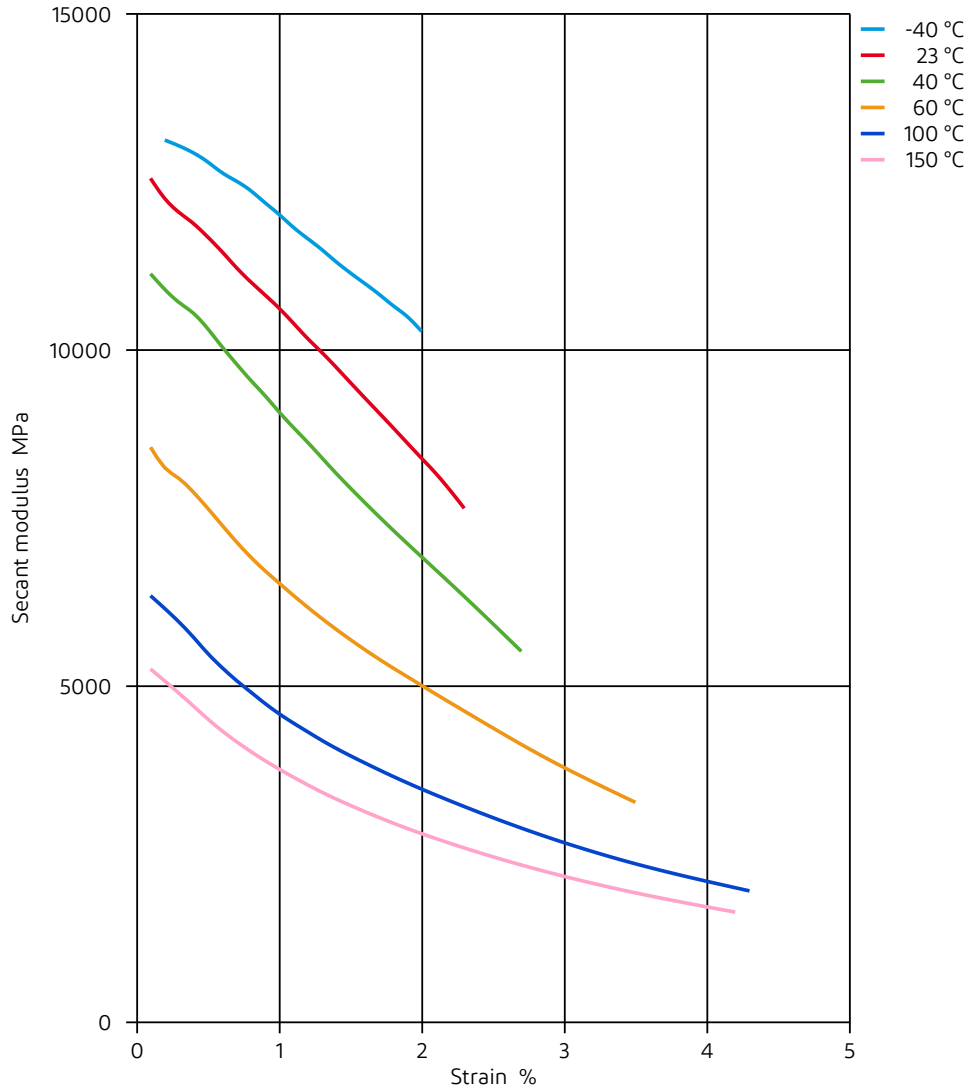
Secant modulus-strain (cond.)



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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

Other

- ✔ Urea solution (32.5% by mass), 23°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).