

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® HTN51G35HSL BK083 is a 35% glass reinforced, heat stabilized, lubricated, hydrolysis resistant high performance polyamide resin. It is also a PPA resin.

Product information

Resin Identification Part Marking Code Part Marking Code ISO designation	PA6T/XT-GF35 >PA6T/XT-GF35 >PPA-GF35< ISO 16396-PA6T	<	ISO 1043 ISO 11469 SAE J1344
Rheological properties	dry/cond.		
Viscosity number	100/*	cm ³ /g	ISO 307, 1628
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	12000/11500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	230/210	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.4/2.3	%	ISO 527-1/-2
Flexural modulus	12600/-	MPa	ISO 178
Flexural strength	320/-	MPa	ISO 178
Charpy impact strength, 23°C	60/40	kJ/m²	ISO 179/1eU
Charpy impact strength, -30 °C	60/40	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	10/10	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C	10/9	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	9/-	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	10/-	kJ/m²	ISO 180/1A
Izod notched impact strength, -30 °C	8.0/-	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	65/-	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	67/-	kJ/m²	ISO 180/1U
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
Temperature of deflection under load, 1.8 MPa	264/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	284/*	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	18/*	E-6/K	ISO 11359-1/-2

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HIGH PERFORMANCE POLYAMIDE RESIN

Coefficient of linear thermal expansion	19/*	E-6/K	ISO 11359-1/-2
(CLTE), parallel	10 /*		
Coeff. of linear therm. expansion, parallel, 55-160°C	18/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	51/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE),	60/*	E-6/K	ISO 11359-1/-2
normal			
Coeff. of linear therm. expansion, normal, 55-160°C	75/*	E-6/K	ISO 11359-1/-2
Specific heat capacity of melt	1820	J/(kg K)	ISO 22007-4
Specific heat capacity solid	610 ^[DS]	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	125	°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
RTI, strength, 3.0mm	150	°C	UL 746B
[DS]: Derived from similar grade			
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/*	11111	UL 94
Burning Behav. at thickness h	HB/*	class	IEC 60695-11-10
Thickness tested	0.85/*		IEC 60695-11-10
UL recognition	0.857 yes/*	mm	UL 94
-	26/*	%	ISO 4589-1/-2
Oxygen index	26/ 750/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	750/- 960/-	°C	IEC 60695-2-12 IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm		°C	
Glow Wire Ignition Temperature, 1.5mm	775/-	-	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	800/-	°C	IEC 60695-2-13
FMVSS Class	В		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	21	mm/min	ISO 3795 (FMVSS 302)
Electrical properties			

Electrical properties

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Relative permittivity, 100Hz	4/-		IEC 62631-2-1
Relative permittivity, 1MHz	3.8/-		IEC 62631-2-1
Dissipation factor, 100Hz	90/-	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	170/-	E-4	IEC 62631-2-1
Volume resistivity	>1E13/-	Ohm.m	IEC 62631-3-1
Electric strength	36/36	kV/mm	IEC 60243-1
Comparative tracking index	525/-		IEC 60112

drv/cond



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Physical/Other properties Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density [1]: 2mm thickness	dry/cond. 1.4/* 4/* 0.5 ^[1] /* 1470/-	% % kg/m ³	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
VDA Properties			
Odour	4	class	VDA 270
Injection			
Drying Recommended	yes		
Drying Temperature		°C	
Drying Time, Dehumidified Dryer	6 - 8	h	
Processing Moisture Content	≤0.1	%	
Melt Temperature Optimum	325	°C	
Min. melt temperature	320	-	
Max. melt temperature	330	-	
Mold Temperature Optimum		°C	
Min. mould temperature	140 ^[2]	°C	

[2]: Higher temperature needed for thinner sections.

Characteristics

Max. mould temperature

Processing	Injection Moulding
Special characteristics	Heat stabilised or stable to heat, Hydrolysis resistant, Laser Markable
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.

180 °C

Automotive

OEM
Chery
Ford

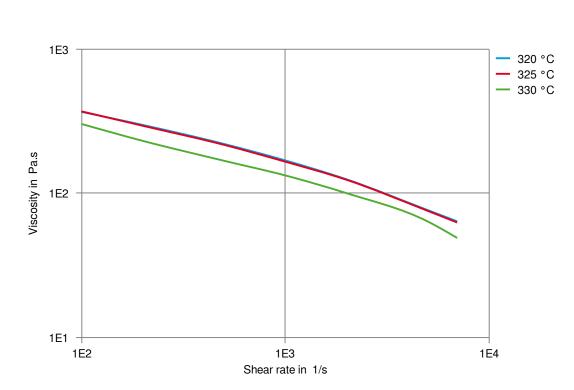
STANDARD Q/SQR S1-208-2022 WSS-M98P14-A3 ADDITIONAL INFORMATION

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General Motors	GMW16356P-PPA-GF35	Black
Hyundai	MS941-03 Type N-4	
Renault-Nissan	UB09a, No Spec, Special Part Approval, See Your CE Account Manager.	
Stellantis	B62 0300 /	Technical Black
Stellantis	61/213M+/215E+/H113/H115(168h)13/C1B MS:50156/PPA.GF30-35.10000T./C.HS	CPN4189, 01994_10_00119
Stellantis - Chrysler	MS.50103 / CPN-4189	Black

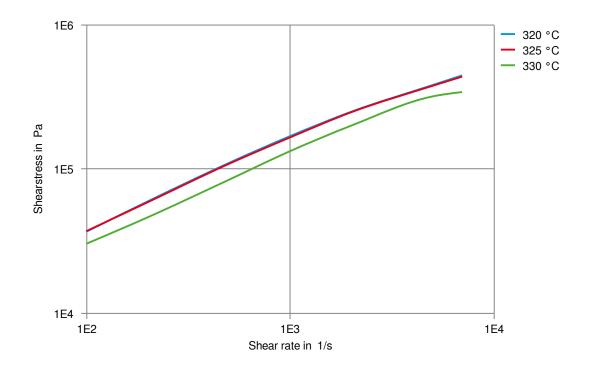
Viscosity-shear rate







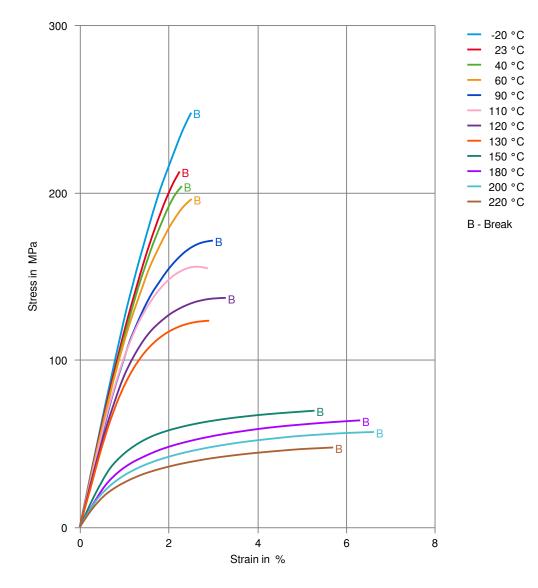
Shearstress-shear rate







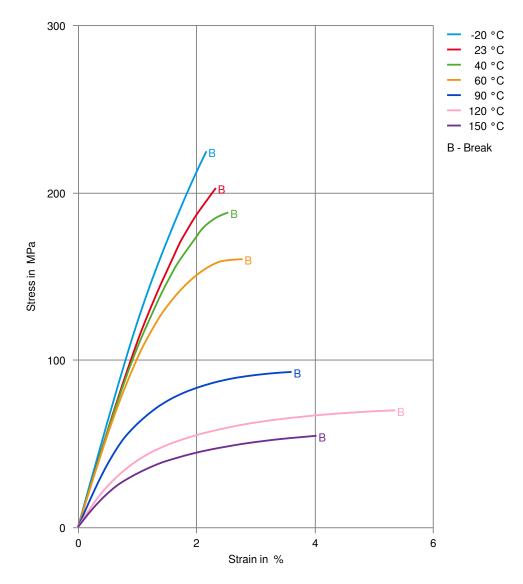
Stress-strain (dry)





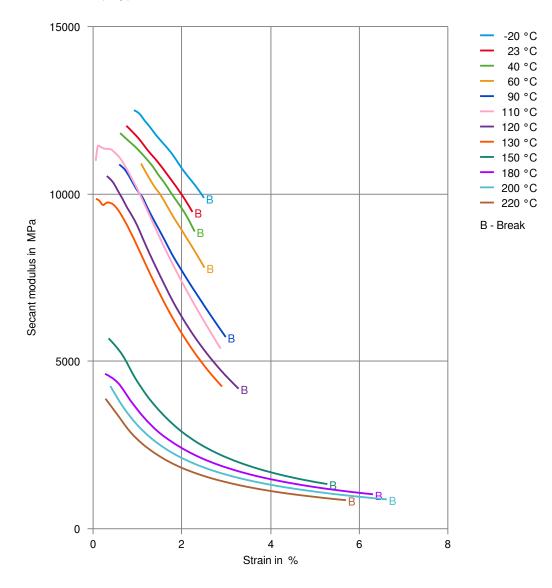


Stress-strain (cond.)



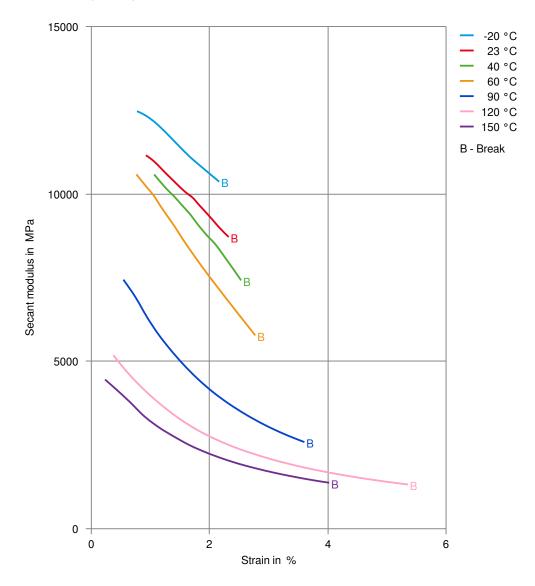


Secant modulus-strain (dry)





Secant modulus-strain (cond.)





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HIGH PERFORMANCE POLYAMIDE RESIN

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

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).

Printed: 2025-05-30

Page: 10 of 10

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