

Zytel® HTN51G45HSL NC010 is a 45% 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-GF45 >PA6T/XT-GF45 >PPA-GF45< ISO 16396-PA6T	<	ISO 1043 ISO 11469 SAE J1344
Rheological properties	dry/cond.		
Moulding shrinkage, parallel Moulding shrinkage, normal Moulding shrinkage, parallel, annealed Moulding shrinkage, normal, annealed [1]: annealing 2h at 170°C	0.1/- 0.6/- 0.2 ^[1] /* 0.75/*	% % %	ISO 294-4, 2577 ISO 294-4, 2577 ISO 294-4 ISO 294-4
Typical mechanical properties	dry/cond.		
Tensile modulus Tensile stress at break, 5mm/min Tensile strain at break, 5mm/min Flexural modulus Flexural strength Tensile creep modulus, 1h Tensile creep modulus, 1000h Charpy impact strength, 23°C Charpy impact strength, -30°C Charpy notched impact strength, 23°C Charpy notched impact strength, -30°C Charpy notched impact strength, -30°C Charpy notched impact strength, -40°C Izod notched impact strength, -40°C Izod notched impact strength, -40°C Izod impact strength, 23°C Hardness, Rockwell, M-scale Hardness, Rockwell, R-scale Poisson's ratio	15500/15000 260/230 2.4/2.1 15000/15000 370/- */12000 90/75 85/- 12/11 12/- 13/- 12/12 13.0/- 87/- 109/- 125/- 0.33/0.33	MPa MPa MPa MPa MPa kJ/m ² kJ/m ² kJ/m ² kJ/m ² kJ/m ² kJ/m ²	ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 178 ISO 178 ISO 899-1 ISO 179/1eU ISO 179/1eU ISO 179/1eA ISO 179/1eA ISO 179/1eA ISO 180/1A ISO 180/1A ISO 180/1U ISO 2039-2 ISO 2039-2
Thermal properties	dry/cond.		
Melting temperature, 10°C/min Melting temperature, first heat Glass transition temperature, 10°C/min Temperature of deflection under load, 1.8 MPa Temperature of deflection under load, 0.45 MPa Coeff. of linear therm. expansion, parallel, -40-23°C Coefficient of linear thermal expansion (CLTE), parallel	300/* 300/* 140/95 265/* 286/* 15/* 15/*	°C °C °C °C E-6/K E-6/K	ISO 11357-1/-3 ISO 11357-1/-3 ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 11359-1/-2 ISO 11359-1/-2



Coeff. of linear therm. expansion, parallel, 55-160°C Coeff. of linear therm. expansion, normal, -40-23°C Coefficient of linear thermal expansion (CLTE), normal	13/* 50/* 54/*	E-6/K E-6/K E-6/K	ISO 11359-1/-2 ISO 11359-1/-2 ISO 11359-1/-2
normal Thermal conductivity of melt Specific heat capacity of melt RTI, electrical, 0.75mm RTI, electrical, 1.5mm RTI, electrical, 3.0mm RTI, impact, 0.75mm RTI, impact, 1.5mm RTI, impact, 3.0mm RTI, strength, 0.75mm RTI, strength, 1.5mm	0.28 1610 150 150 150 120 125 150 130 140/*	W/(m K) J/(kg K) °C °C °C °C °C °C °C °C °C °C	ISO 22007-2 ISO 22007-4 UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B UL 746B
RTI, strength, 3.0mm	150	°C	UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Burning Behav. at thickness h Thickness tested UL recognition Oxygen index FMVSS Class Burning rate, Thickness 1 mm	HB/* 1.5/* yes/* HB/* 0.85/* yes/* 24/* B 29	class mm class mm % mm/min	IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)
Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength Comparative tracking index	dry/cond. 4.2/- 3.9/- 90/- 150/- >1E13/1E13 */1E14 35/34 600/600	E-4 E-4 Ohm.m Ohm kV/mm	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112
Physical/Other properties Humidity absorption, 2mm Water absorption, 2mm Density [C]: Calculated	dry/cond. 1.5 / * ^[C] 3.4 / * ^[C] 1570 / -	% % kg/m³	Sim. to ISO 62 Sim. to ISO 62 ISO 1183



Zytel[®] HTN51G45HSL NC010

HIGH PERFORMANCE POLYAMIDE RESIN

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	145 °C
Min. mould temperature	130 ^[2] °C
Max. mould temperature	160 °C
Ejection temperature	265 °C

[2]: 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

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.

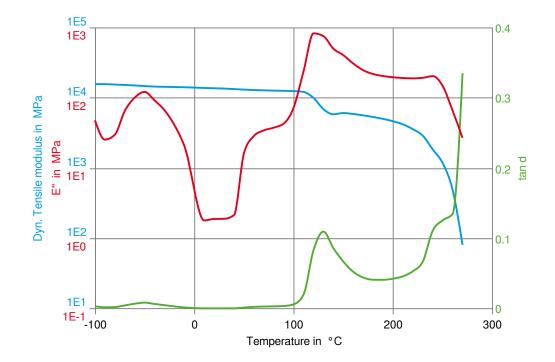
When lower mold temperatures are used, the initial warpage and shrinkage may be lower, but the surface appearance and chemical resistance may be reduced, and the dimensional change may be greater when parts are subsequently heated.

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Bosch	N28 BN05-OX036	
General Motors	GMW16356P-PPA-GF45	Natural
General Motors	GMW16360P-PPA-GF45	Natural

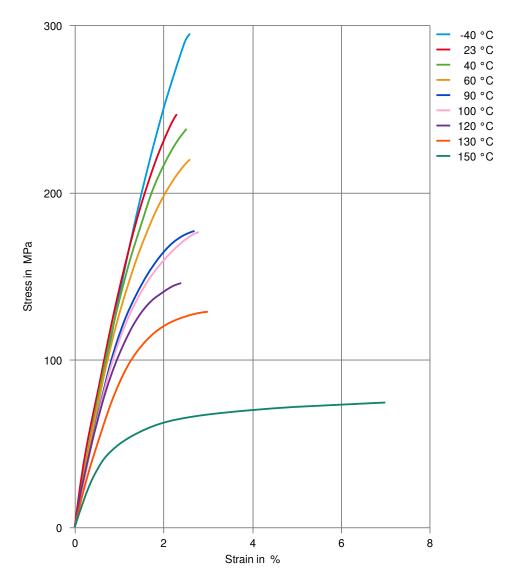


Dynamic Tensile modulus-temperature (dry)



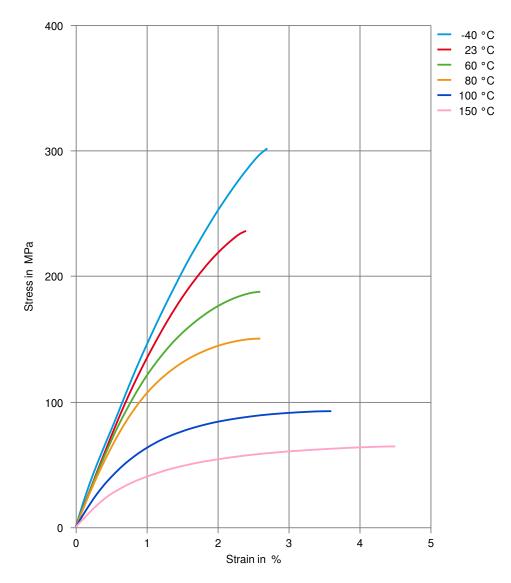


Stress-strain (dry)





Stress-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

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).

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