DuPont™ Zytel® HTNFR52G45BL BK337 HIGH PERFORMANCE POLYAMIDE RESIN

Product Information

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® HTNFR52G45BL BK337 is a 45% glass reinforced, flame retardant, lubricated high performance polyamide resin that has been developed for connector applications.

Resin Identification	General information	Value	Unit	Test Standard
Part Marking Code		PA6T/66-GF45FR(1	-	ISO 1043
Part Marking Code SPPA-GF45FRc SAE J1344 Rheological properties dry / cond Unit Test Standard Molding shrinkage, parallel 0.2 / - % ISO 294-4, 2577 Molding shrinkage, normal 0.6 / - % ISO 294-4, 2577 Mechanical properties dry / cond Unit Test Standard Tensile Modulus 17000 / 17000 MPa ISO 527-1/2 Stress at break 1700 / 17000 MPa ISO 527-1/2 Stress at break 1.3 / 1.5 % ISO 527-1/2 Strain at break 1.3 / 1.5 % ISO 527-1/2 Strain at break 1.3 / 1.5 % ISO 527-1/2 Strain at break 1.3 / 1.5 % ISO 527-1/2 Flexural Modulus 15200 / 15200 MPa ISO 178 Flexural Strength 290 / 260 MPa ISO 178 Charpy impact strength 290 / 260 MPa ISO 178 Charpy notched impact strength ISO 179/1eU 73 'F		6+72)		
Rheological properties	Part Marking Code	PA6T/66-GF45FR(1	-	ISO 11469
Rheological properties dry / cond Unit Test Standard		6+72)		
Molding shrinkage, parallel	Part Marking Code	>PPA-GF45FR<	-	SAE J1344
Modding shrinkage, normal Modding shrinkage, normal Modding shrinkage, normal Tensite Modulus 17000 17000 MPa ISO 527-17-2	Rheological properties	dry / cond	Unit	Test Standard
Mechanical properties dry / cond Unit Test Standard	Molding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Tensile Modulus	Molding shrinkage, normal	0.6 / -	, .	ISO 294-4, 2577
Stress at break	Mechanical properties	dry / cond	Unit	Test Standard
Strain at break	Tensile Modulus	17000 / 17000	MPa	ISO 527-1/-2
Flexural Modulus	Stress at break	175 / 155		ISO 527-1/-2
Flexural Strength	Strain at break	1.3 / 1.5	%	ISO 527-1/-2
Charpy impact strength	Flexural Modulus	15200 / 15200	MPa	ISO 178
73°F	Flexural Strength	290 / 260	MPa	ISO 178
-22°F Charpy notched impact strength 73°F 13 /	Charpy impact strength			ISO 179/1eU
Charpy notched impact strength 73°F 13 / - kJ/m² 13 / - kJ/m² 12 / - 40°F 13 / - kJ/m² 150 180/1A 120 notched impact strength, 73°F 12 / - kJ/m² ISO 180/1A 120 1357-1/-3 12 / - kJ/m² ISO 11357-1/-3 150 11357-1/-3 150 75-1/-2 150 75-1/	73°F	42 / 36	kJ/m²	
73°F 13 / - kJ/m² -40°F 13 / - kJ/m² Izod notched impact strength, 73°F 12 / - kJ/m² ISO 180/1A Thermal properties dry / cond Unit Test Standard Melting temperature, first heat 310 / * °C ISO 11357-1/-3 Temp. of deflection under load ISO 75-1/-2 ISO 75-1/-2 260 psi 284 / * °C ISO 75-1/-2 260 psi 300 / * °C ISO 11359-1/-2 Coeff. of linear therm. expansion, parallel 15 / * E-6/K ISO 11359-1/-2 normal 50 / * E-6/K ISO 11359-1/-2 Normal, -40-23°C 50 / * E-6/K E-6/K Normal, 55-160°C 75 / * E-6/K E-6/K Parallel, -40-23°C 15 / * E-6/K UL 746B 30mil 140 / * °C 60mil 140 / * °C RTI, electrical UL 746B 30mil 140 / * °C RTI, impact UL 746B 30mil 120 / * °C 60mil 120 / * °C	-22°F	40 / 36	kJ/m²	
13 / - kJ/m² Izod notched impact strength, 73°F 12 / - kJ/m² ISO 180/1A Thermal properties dry / cond Unit Test Standard	Charpy notched impact strength			ISO 179/1eA
Izod notched impact strength, 73°F	73°F	13 / -	kJ/m²	
Thermal properties	-40° F		kJ/m²	
Melting temperature, first heat 310 / * °C ISO 11357-1/-3 Temp. of deflection under load ISO 75-1/-2 260 psi 284 / * °C 65 psi 300 / * °C Coeff. of linear therm. expansion, parallel 15 / * E-6/K ISO 11359-1/-2 Coeff. of linear therm. expansion ISO 11359-1/-2 normal 50 / * E-6/K E-6/K Normal, -40-23 °C 50 / * E-6/K E-6/K Parallel, -40-23 °C 15 / * E-6/K E-6/K Parallel, 55-160 °C 8 / * E-6/K UL 746B 30mil 140 / * °C 60mil 140 / * °C RTI, impact UL 746B 30mil 120 °C 60mil 120 °C 60mil 120 °C	Izod notched impact strength, 73°F	12 / -	kJ/m²	ISO 180/1A
Temp. of deflection under load 260 psi 65 psi 300 / * °C Coeff. of linear therm. expansion, parallel Coeff. of linear therm. expansion normal normal Normal, -40-23 °C Parallel, -40-23 °C Parallel, 55-160 °C RTI, electrical 30mil 60mil 140 / * °C RTI, impact 30mil 60mil 120 °C 60mil 120 / * °C	Thermal properties			Test Standard
260 psi 284 / * ° C 65 psi 300 / * ° C Coeff. of linear therm. expansion, parallel 15 / * E-6/K ISO 11359-1/-2 Liso 11359-1/-2 normal solspan="2">normal, -40-23°C 50 / * E-6/K E-6/K Normal, 55-160°C 75 / * E-6/K Parallel, -40-23°C 15 / * E-6/K Parallel, 55-160°C 8 / * E-6/K RTI, electrical UL 746B 30mil 140 / * °C 60mil 140 / * °C 120mil 140 °C RTI, impact UL 746B 30mil 120 °C 60mil 120 °C 60mil 120 °C	Melting temperature, first heat	310 / *	°C	ISO 11357-1/-3
300 / * ° C				ISO 75-1/-2
Coeff. of linear therm. expansion, parallel 15 / * E-6/K ISO 11359-1/-2 Coeff. of linear therm. expansion ISO 11359-1/-2 normal 50 / * E-6/K Normal, -40-23°C 50 / * E-6/K Normal, 55-160°C 75 / * E-6/K Parallel, -40-23°C 15 / * E-6/K Parallel, 55-160°C 8 / * E-6/K RTI, electrical UL 746B 30mil 140 / * °C 60mil 140 / * °C RTI, impact UL 746B 30mil 120 / * °C 60mil 120 / * °C	260 psi	284 / *		
Coeff. of linear therm. expansion normal normal, -40-23 °C Normal, 55-160 °C Parallel, -40-23 °C Parallel, 55-160 °C RTI, electrical 30mil 140 /* °C RTI, impact 30mil 120 °C 60mil 120 °C 60mil 120 °C 60mil 120 °C	65 psi			
normal	Coeff. of linear therm. expansion, parallel	15 / *	E-6/K	ISO 11359-1/-2
Normal, -40-23 °C Normal, 55-160 °C Parallel, -40-23 °C Parallel, 55-160 °C RTI, electrical 30mil 30mil 140 /* °C 120mil RTI, impact 30mil 120 °C 60mil 120 /* °C	Coeff. of linear therm. expansion			ISO 11359-1/-2
Normal, 55-160°C Parallel, -40-23°C Parallel, 55-160°C RTI, electrical 30mil 30mil 140 / * ° C 60mil 140 / * ° C 120mil RTI, impact 30mil 120 ° C 60mil 120 / * ° C	normal		E-6/K	
Parallel, -40-23°C 15 / * E-6/K Parallel, 55-160°C 8 / * E-6/K RTI, electrical UL 746B 30mil 140 / * °C 60mil 140 / * °C 120mil 140 °C UL 746B 30mil 120 °C C 60mil 120 / * °C	Normal, -40-23°C	50 / *	E-6/K	
Parallel, 55-160°C 8 / * E-6/K RTI, electrical UL 746B 30mil 140 / * °C 60mil 140 / * °C 120mil 140 °C RTI, impact UL 746B 30mil 120 °C 60mil 120 / * °C	Normal, 55-160°C	75 / *	E-6/K	
RTI, electrical UL 746B 30mil 140 / * ° C 60mil 140 / * ° C 120mil 140 ° C RTI, impact UL 746B 30mil 120 ° C 60mil 120 * C	Parallel, -40-23°C	15 / *	E-6/K	
30mil 140 / * ° C 60mil 140 / * ° C 120mil 140 ° C RTI, impact UL 746B 30mil 120 ° C 60mil 120 / * ° C	Parallel, 55-160°C	8 / *	E-6/K	
60mil 140 / * ° C 120mil 140 ° C RTI, impact UL 746B 30mil 120 ° C 60mil 120 / * ° C				UL 746B
120mil 140 °C RTI, impact UL 746B 30mil 120 °C 60mil 120 / * °C				
RTI, impact UL 746B 30mil 120 °C 60mil 120 / * °C				
30mil 120 °C 60mil 120 / * °C		140	°C	
60mil 120 / * °C				UL 746B
120mil				
	120mil	120	°C	

Revised: 2017-08-17 Page: 1 of 3

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RTI, strength				UL 746B
30mil		120	°C	
60mil		120 / *	°C	
120mil		130	°C	
Flammability		dry / cond	Unit	Test Standard
Burning Behav. at 60mil nom. thickn.		V-0 / *	class	IEC 60695-11-10
Thickness tested		1.5 / *	mm	IEC 60695-11-10
UL recognition		ves / *	-	UL 94
Burning Behav. at thickness h		V-0 / *	class	IEC 60695-11-10
Thickness tested		0.75 / *	mm	IEC 60695-11-10
UL recognition		ves / *	-	UL 94
Oxygen index		49 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 40mil		960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 40mil		900 / -	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame		700 /		IEC 60335-1
40mil		875 / -	°C	120 00000 1
60mil		875 / -	°Č	
80mil		875 / -	°Č	
120mil		875 / -	°C	
FMVSS Class		B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm		<100	mm/min	ISO 3795 (FMVSS 302)
Electrical properties		dry / cond	Unit	Test Standard
Relative permittivity		dry / cond	Offic	IEC 62631-2-1
100Hz		3.9 / -		ILC 02031-2-1
1MHz		3.6 / -	-	
Dissipation factor		3.0 / -	<u> </u>	IEC 62631-2-1
100Hz		45 / -	E-4	ILC 02031-2-1
		43 / - 112 / -	E-4 E-4	
1MHz		>1E13 / -	Ohm*m	IEC 62631-3-1
Volume resistivity				
Electric strength		31 / -	kV/mm	IEC 60243-1
Comparative tracking index		500 / -	-	IEC 60112
Dissipation Factor, 23°C		440 /	- 4	ASTM D 2520 B
1 GHz		110 / -	E-4	
10 GHz		110 / -	E-4	T + C
Other properties		dry / cond	Unit	Test Standard
Density		1760 / -	kg/m³	ISO 1183
Injection		Value	Unit	Test Standard
Drying Recommended		yes	- °C	<u> </u>
Drying Temperature		≥100		<u>-</u>
Drying Time, Dehumidified Dryer		6 - 8	h	-
Processing Moisture Content		≤0.1	%	-
Melt Temperature Optimum		325	°C	<u>-</u>
Min. melt temperature		320	°C	-
Max. melt temperature		330	°C	-
Min. mold temperature		90	°C	<u>-</u>
Max. mold temperature		110	°C	-
Characteristics				
Processing	 Injection Molding 			
Delivery form Additives	Pellets Lubricants		Release agent	

Processing Texts

Regional Availability

Injection molding

Revised: 2017-08-17 Page: 2 of 3

Asia Pacific

South and Central America

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Near East/Africa

Global

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· North America

Europe

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During molding, use proper protective equipment and adequate ventilation. Avoid exposure to fumes and limit the holdup time and temperature of the resin in the machine. Purge degraded resin carefully with HDPE.

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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Revised: 2017-08-17 Page: 3 of 3

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