

Zytel® 70G33HS1L BK031

NYLON RESIN

DuPont Engineering Polymers



Prospector

Product Description

Zytel® 70G33HS1L BK031 is a 33% glass fiber reinforced, heat stabilized, black polyamide 66 resin for injection molding.

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Filler / Reinforcement	• Glass Fiber Reinforcement, 33% Filler by Weight		
Additive	• Heat Stabilizer		
Features	• Good Creep Resistance • Good Thermal Stability	• Heat Stabilized • Ultrasonic Weldable	
RoHS Compliance	• Contact Manufacturer		
Appearance	• Black		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)		
Part Marking Code (ISO 11469)	• >PA66-GF33<		
Resin ID (ISO 1043)	• PA66-GF33		

Physical	Dry	Conditioned	Unit	Test Method
Specific Gravity				
--	1.39	--	(g/cm ³)	ASTM D792
--	1.39	--	g/cm ³	ISO 1183
Molding Shrinkage				
Flow: 0.0630 in (1.60 mm)	0.0020 (0.20)	--	in/in (%)	Internal Method
Flow: 0.126 in (3.20 mm)	0.0030 (0.30)	--	in/in (%)	Internal Method
Flow: 0.252 in (6.40 mm)	0.0050 (0.50)	--	in/in (%)	Internal Method
Across Flow: 0.0630 in (1.60 mm)	0.010 (1.0)	--	in/in (%)	Internal Method
Across Flow: 0.126 in (3.20 mm)	0.010 (1.0)	--	in/in (%)	Internal Method
Across Flow: 0.252 in (6.40 mm)	0.011 (1.1)	--	in/in (%)	Internal Method
Across Flow: 0.0787 in (2.00 mm)	1.1	--	%	ISO 294-4
Flow: 0.0787 in (2.00 mm)	0.30	--	%	ISO 294-4

Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F (23°C))	1.52E+6 (10500)	1.16E+6 (8000)	psi (MPa)	ISO 527-2

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Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Stress				
Break, 73°F (23°C)	29000 (200)	20300 (140)	psi (MPa)	ISO 527-2
73°F (23°C)	27000 (186)	--	psi (MPa)	ASTM D638
Tensile Elongation				
Break, 73°F (23°C)	3.0	--	%	ASTM D638
Break, 73°F (23°C)	3.0	4.0	%	ISO 527-2
Flexural Modulus				
73°F (23°C)	1.30E+6 (8970)	--	psi (MPa)	ASTM D790
73°F (23°C)	1.35E+6 (9300)	--	psi (MPa)	ISO 178
Flexural Strength				
73°F (23°C)	39900 (275)	--	psi (MPa)	ASTM D790
73°F (23°C)	40600 (280)	28300 (195)	psi (MPa)	ISO 178
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				
-40°F (-40°C)	4.8 (10)	--	ft-lb/in ² (kJ/m ²)	ISO 179/1eA
73°F (23°C)	6.2 (13)	6.2 (13)	ft-lb/in ² (kJ/m ²)	
Charpy Unnotched Impact Strength				
73°F (23°C)	36 (75)	38 (80)	ft-lb/in ² (kJ/m ²)	ISO 179/1eU
Notched Izod Impact				
73°F (23°C)	2.0 (110)	--	ft-lb/in (J/m)	ASTM D256
-40°F (-40°C)	4.8 (10)	--	ft-lb/in ² (kJ/m ²)	ISO 180/1A
73°F (23°C)	5.7 (12)	--	ft-lb/in ² (kJ/m ²)	ISO 180/1A
Unnotched Izod Impact (73°F (23°C))				
	20 (1100)	--	ft-lb/in (J/m)	ASTM D4812
Thermal	Dry	Conditioned	Unit	Test Method
Deflection Temperature Under Load				
66 psi (0.45 MPa), Unannealed	500 (260)	--	°F (°C)	ASTM D648
66 psi (0.45 MPa), Unannealed	502 (261)	--	°F (°C)	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	478 (248)	--	°F (°C)	ASTM D648
264 psi (1.8 MPa), Unannealed	486 (252)	--	°F (°C)	ISO 75-2/A
Melting Temperature				
-- ²	504 (262)	--	°F (°C)	ISO 11357-3
--	505 (263)	--	°F (°C)	ASTM D3418
CLTE				
Flow: -40 to 73°F (-40 to 23°C)	0.000013 (0.000024)	--	in/in/°F (cm/cm/°C)	ASTM E831 ISO 11359-2
Flow: 73 to 131°F (23 to 55°C)	0.000010 (0.000018)	--	in/in/°F (cm/cm/°C)	
Flow: 131 to 320°F (55 to 160°C)	7.2E-6	--	in/in/°F	

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Thermal	Dry	Conditioned	Unit	Test Method
	(0.000013)		(cm/cm/°C)	
Transverse: -40 to 73°F (-40 to 23°C)	0.000036 (0.000065)	--	in/in/°F (cm/cm/°C)	
Transverse: 73 to 131°F (23 to 55°C)	0.000046 (0.000083)	--	in/in/°F (cm/cm/°C)	
Transverse: 131 to 320°F (55 to 160°C)	0.000076 (0.00014)	--	in/in/°F (cm/cm/°C)	
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating - UL				UL 94
0.0280 in (0.710 mm)	HB	--		
0.0295 in (0.750 mm)	HB	--		
0.0591 in (1.50 mm)	HB	--		
0.118 in (3.00 mm)	HB	--		
Flammability Classification				IEC 60695-11-10, -20
0.0280 in (0.710 mm)	HB	--		
0.0295 in (0.750 mm)	HB	--		
0.0591 in (1.50 mm)	HB	--		
0.118 in (3.00 mm)	HB	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.0280 in (0.710 mm)	1340 (725)	--	°F (°C)	
0.0591 in (1.50 mm)	1290 (700)	--	°F (°C)	
0.118 in (3.00 mm)	1470 (800)	--	°F (°C)	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.0280 in (0.710 mm)	1380 (750)	--	°F (°C)	
0.0591 in (1.50 mm)	1340 (725)	--	°F (°C)	
0.118 in (3.00 mm)	1520 (825)	--	°F (°C)	

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UL	Dry	Conditioned	Unit	Test Method
RTI Str				UL 746
0.0280 in (0.710 mm)	284 (140)	--	°F (°C)	
0.0591 in (1.50 mm)	284 (140)	--	°F (°C)	
0.118 in (3.00 mm)	284 (140)	--	°F (°C)	
RTI Imp				UL 746
0.0280 in (0.710 mm)	257 (125)	--	°F (°C)	
0.0591 in (1.50 mm)	257 (125)	--	°F (°C)	
0.118 in (3.00 mm)	257 (125)	--	°F (°C)	
RTI Elec				UL 746
0.0280 in (0.710 mm)	284 (140)	--	°F (°C)	
0.0591 in (1.50 mm)	284 (140)	--	°F (°C)	
0.118 in (3.00 mm)	284 (140)	--	°F (°C)	
Comparative Tracking Index (CTI)	408	--	V	UL 746
Comparative Tracking Index (CTI) (PLC)	PLC 1	--		UL 746

Injection	Dry (English)	Dry (SI)
Drying Temperature	176 °F	80.0 °C
Drying Time	2.0 to 4.0 hr	2.0 to 4.0 hr
Suggested Max Moisture	< 0.20 %	< 0.20 %
Processing (Melt) Temp	545 to 581 °F	285 to 305 °C
Melt Temperature, Optimum	563 °F	295 °C
Mold Temperature	158 to 248 °F	70.0 to 120 °C
Mold Temperature, Optimum	212 °F	100 °C
Drying Recommended	Yes, if moisture content of resin exceeds recommended level	Yes, if moisture content of resin exceeds recommended level

Notes

¹ Typical properties: these are not to be construed as specifications.

² 10°C/min