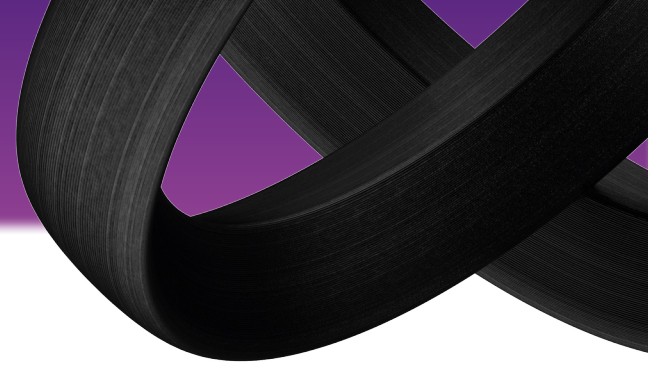


Carbon Fiber Reinforced PP

Technical Datasheet



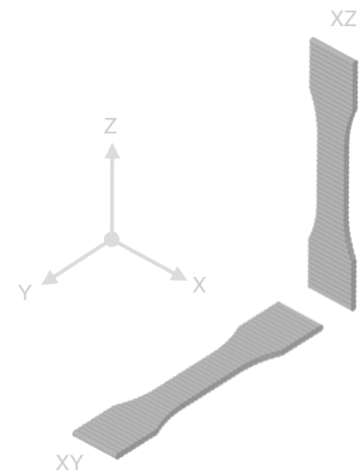
Carbon Fiber Reinforced PP

FL900PP-CF

Xtellar Carbon Fiber PP filaments are engineering-grade composite made from 100% recycled carbon fiber (CF) and is designed to provide robust mechanical performance while maintaining a high degree of printability for complex structures. This fiber reinforced filament provides engineering level performance without compromising any of PP's inherent properties which include light weight, water resistance (no drying needed), chemical resistance, and impact resistance.

Printing Conditions

Nozzle Temperature	240°C / 464°F
Bed Temperature	80°C / 176°F
Printing Speed	30-55 mm/s
Fan Speed	50%
Nozzle Type	Hardened
Bed Material	Glass
Bed Adhesion Method	Magigoo PP or PPGF



Material Properties

Property	Standard	Bulk	Print Orientation	
			XY	XZ
Density @ 23°C, g/cm ³	ASTM D792	0.93	.85 ± 0.01	
Melt Flow Rate @ 230°C / 2.16 kg, g/10min	ASTM D1238	3.46		
Hardness, Shore A	ASTM D2240		94 ± 0.4	
Hardness, Shore D	ASTM D2240		50 ± 2.5	
24 h Water Absorption, wt%	ASTM D570			

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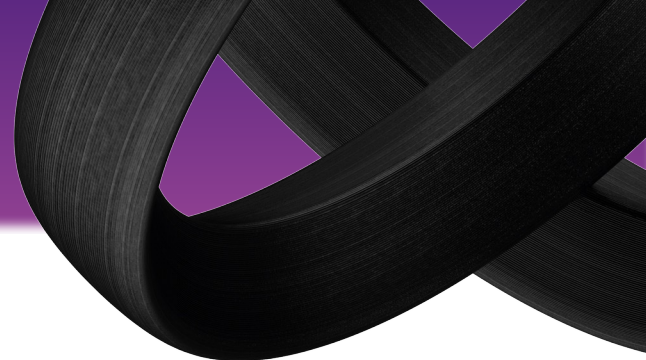
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Properties are measured in Bulk (injection molded), XY and XZ orientations. Samples were printed using processing conditions comparable to those in the Printing Conditions table on Page 1.

Thermal Properties

Property	Standard	Bulk	Print Orientation	
			XY	XZ
Glass Transition Temperature (T _g), °C	ASTM E1640	-57.9 ± 0.3		
Melting Temperature (T _m), °C	ASTM D3418	165		
HDT @ 0.45 MPa, °C	ASTM D648		136.3 ± 4.7	69.6 ± 0
HDT @ 1.82 MPa, °C	ASTM D648		65.8 ± 0.1	42.3 ± 0.4
Vicat Softening Temperature @ 10 N, °C	ASTM D1525		140.5 ± 0.8	137.0 ± 1.0
Mean CTE @ -50°C to 100°C, μm/m•k	ASTM E831			

Flammability

Property	Standard	Bulk	Print Orientation	
			XY	XZ
Onset of Resin Degradation, °C	ASTM D2584		350	
Linear Rate of Burning (100 mm), mm/min	ASTM D635			
25 mm Burn Time, s	ASTM D635			
Afterflame Time, s	ASTM D3801			
Afterglow Time, s	ASTM D3801			
Contact Ignition	ASTM D3801			

Electrical

Property	Standard	Bulk	Print Orientation	
			XY	XZ
Surface Resistivity, Ohm (Ω)	ASTM D257			
Volume Resistivity, Ohm-m (Ω-m)	ASTM D257			
Surface Conductivity, mS/m	ASTM D257			
Volume Conductivity, mS/m	ASTM D257			

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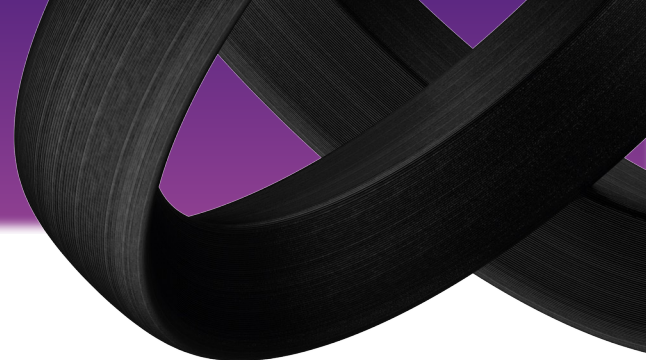
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Mechanical Properties

		Print Orientation			
		Property	Standard	XY	XZ
Tensile		Tensile Strength @ Yield, MPa		40.8 ± 0.6	6.4 ± 0.3
		Tensile Strength @ Break, MPa		39.8 ± 0.7	6.4 ± 0.3
		Tensile Elongation @ Yield, %	ASTM D638	1.7 ± 0.1	2.7 ± 0.8
		Tensile Elongation @ Break, %		1.8 ± 0.1	3.0 ± 0.9
		Tensile (Young's) Modulus, MPa		6,094 ± 177	737 ± 27
Flexural		Flexural Strength @ 1% Strain, MPa		26.2 ± 0.6	3.6 ± 1.1
		Flexural Strength @ Break, MPa		(NB)	(NB)
		Flexural Strain @ Break, %	ASTM D790	(NB)	(NB)
		Flexural Modulus @ 1% Strain, MPa		2618 ± 60	360 ± 111
		Flexural Modulus @ Break, MPa		(NB)	(NB)
Compression		Compressive Strength @ Yield, MPa		23.8 ± 0.6	31.5 ± 1.2
		Compressive Disp. @ Max Load, %	ASTM D695	6.0 ± 1.1	6.0 ± 1.1
		Compressive Modulus, MPa		977 ± 181	299 ± 27
Unnotched Izod		Impact Strength @ 23°C, J/m		142.6 ± 8.9 (P)	46.1 ± 8.2 (C)
		Impact Strength @ 0°C, J/m	ASTM D4812	112.6 ± 4.6 (C/P)	34.9 ± 5.8 (C)
		Impact Strength @ -20°C, J/m		111.9 ± 13.5 (C)	28.6 ± 7.4 (C)
Notched Izod		Impact Strength @ 23°C, J/m		60.7 ± 4.3 (P)	20.8 ± 2.9 (P)
		Impact Strength @ 0°C, J/m	ASTM D256	43.4 ± 1.9 (P)	14.5 ± 1.3 (H)
		Impact Strength @ -20°C, J/m		40.1 ± 3.1 (P)	5.3 ± 1.3 (C)
Charpy Impact		Impact Strength @ 23°C, kJ/m ²		8.9 ± 0.3 (H)	3.1 ± 0.2 (C)
		Impact Strength @ 0°C, kJ/m ²	ISO 179	6.9 ± 0.5 (H)	2.0 ± 0.2 (C)
		Impact Strength @ -20°C, kJ/m ²		6.1 ± 1.0 (H)	1.0 ± 0.1 (C)

¹ Parenthesis denote break type (C) = Complete, (P) = Partial, (H) = Hinge, (NB) = No Break

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