

Lyten PA12-CF-3DG

Lyten 3D Graphene™ Reinforced Polyamide Filament

LYTEN

Technical Data Sheet

Product Description

Lyten's PA12 Carbon Fiber filament provides outstanding stiffness and toughness with unmatched print speed and quality. Reinforced with Lyten 3D-Graphene™, confidently choose PA12-CF-3DG to print high resolution parts with low warpage.

Physical Properties

Resin Properties	Typical Value [Imperial]	Typical Value [Metric]	Method ⁽¹⁾
Density	1.08 g/cm ³	1.08 g/cm ³	ASTM D792
Melting Temp.	352 °F	178 °C	DSC
Crystallization Temp.	250 °F	121 °C	
Glass Transition (T _g)	176 °F	80 °C	
DTUL, 1.8 MPa	251 °F	122 °C	ISO 75/B
DTUL, 0.45 MPa	322 °F	162 °C	

Mechanical Properties - Dry State

Properties (XY)	Typical Value [Imperial]	Typical Value [Metric]	Method
Tensile Modulus ⁽²⁾	640 ksi	4.4 GPa	ASTM D638
Tensile Strength ⁽²⁾	9 ksi	62 MPa	
Elongation at Break	3%	3%	
Flexural Modulus ⁽³⁾	622 ksi	4.3 GPa	ISO 178
Flexural Strength ⁽³⁾	17 ksi	119 MPa	
Charpy Impact, notched ⁽⁴⁾	4.2 ft*lb/in ²	8.9 kJ /m ²	ISO 179

Properties (Z)	Typical Value [Imperial]	Typical Value [Metric]	Method
Tensile Modulus	280 ksi	1.9 GPa	ASTM D638
Tensile Strength	7 ksi	50 MPa	
Elongation at Break	5%	5%	
Flexural Modulus	335 ksi	2.3 GPa	ISO 178
Flexural Strength	12 ksi	85 MPa	
Charpy Impact, notched	2.1 ft*lb/in ²	4.5 kJ /m ²	ISO 179

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Mechanical Properties - Wet State⁽⁵⁾

Properties (XY)	Typical Value [Imperial]	Typical Value [Metric]	Method
Tensile Modulus	452 ksi	3.1 GPa	ASTM D638
Tensile Strength	8 ksi	54 MPa	
Elongation at Break	8%	8%	
Flexural Modulus	547 ksi	3.8 GPa	ISO 178
Flexural Strength	15 ksi	103 MPa	
Charpy Impact, notched	5.4 ft*lb/in ²	11.3 kJ /m ²	ISO 179

Recommended Printing Conditions

Print Conditions	Typical Value [Imperial]	Typical Value [Metric]
Nozzle Temperature	518 °F	270 °C
Nozzle Diameter	0.4 or 0.6 mm	0.4 or 0.6 mm
Bed Temperature	194 to 230 °F	90 to 110 °C
Surface Preparation	Garolite print bed: no surface preparation needed (optimal) PEI print bed: glue stick or liquid glue required	
Print Speed	Up to 100 mm/s	Up to 100 mm/s
Part Cooling Fan	Off for all layers	Off for all layers
Drying Conditions	Lyten PA-CF must be thoroughly dried before use 140 °F/60 °C for 8 hours under vacuum (optimal), 176 °F/80 °C for 8 hours without vacuum	
Brim	Use a brim for large prints, sharp corners, and in areas close to the edges of the print bed	

Additional Testing Information

⁽¹⁾ Typical property values are intended as guides, not specifications. Properties designated have been determined using methods which are in accordance with, or substantially in accordance with, the specified testing standards. All testing specimens were printed in the specified plane using the recommended conditions, with 100% infill.

⁽²⁾ ASTM D638 Type IV specimen, 2.0" (50.8 mm) per minute test speed, 0.16" (4mm) thickness.

⁽³⁾ Chord modulus value, 0.05% - 0.25% strain.

⁽⁴⁾ Charpy impact test conducted at 23 °C.

⁽⁵⁾ Wet properties determined by immersing samples in water for 24 hours at room temperature before measurement.

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