NorthPrint 3D

Version 1.0

Technical Data Sheet

PA12-CF Filament

PA12-CF is an FFF 3D printing filament, which is produced with LUVOCOM® 3F PAHT CF 9891 BK as the main raw material. PA12-CF is a long-chain polyimide modified material containing 15% carbon fiber, which has low moisture absorption and low shrinkage, and can be used on FFF 3D printers in non-heated chambers. It has excellent tensile and impact strength and can be used continuously for long periods of time at temperatures up to 150°C while maintaining 50% of its mechanical properties.

Main features:

High stiffness / High strength / No warping / High heat resistance

Main Specifications:

Physical Properties	Test Means		
Density	ISO 1183	g/cm3	1.23~1.26
MFR(250℃/2.16Kg)	ISO 1133	g/10min	3~6
Moisture Absorption(23℃/24h)	ISO 62	%	＜0.3
Mechanical Properties			
Tensile strength	ISO 527	Mpa	50~55
Elongation at break	ISO 527	%	3.5~4.5
Flexural Modulus	ISO 527	Mpa	1300~1500
Flexural Strength	ISO178	Mpa	90~96
Impact Strength	ISO180	KJ/m^2	3.5~5
Thermodynamic Properties			
HDT@ 0.455 MPa(66 psi)	ISO75	℃	90
Continuous Use Temperature	IEC 60216	℃	120
Use Temperature（200 hours longest）		℃	160
Electrical Characteristics			
Insulation Resistance （strip electrode）	IEC 60167	Ω	≤10^2

Surface Resistance	IEC 60093	Ω	≤10^2

Test Sample Printing Conditions:

3D Printer	Guider IIS （Flashforge）
Nozzle Diameter	0.6mm
Nozzle Temperature	275 °C
Printing Speed	50mm/s
Layer	1.8mm
Infill	100%
Standard Printed Sample	See blew attachment

Recommended Printing Parameters:

Parameters	
Nozzle Temperature	260~280℃(270℃ recommended)
Bed Temperature	60~90℃(80℃ recommended)
Bed Materials	Tempered glass, BuildTak, Carbon fiber board
Nozzle Diameter	Φ0.4/0.6mm(Φ0.6mm recommended)
Nozzle and Feeding Gear Material	High Strength Steel
Model Cooling Fan	Off
Layer	0.12~0.3mm
Printing Speed	40~60mm/s(50mm/s recommended)
Idle Speed	60~120mm/s
Printing Environmental Temperature	Room temperature to 50℃
Retraction Distance	4~6mm
Retraction Speed	40~60mm/s
Supporting Materials	PVA,PVOH,BVOH

Note:

To prevent moisture absorption and contamination, the packaging of filament should be kept airtight and undamaged until they are opened for use. For the same reason, some

used filament should be resealed before storage.

If filament deteriorates due to moisture absorption, they should be dried before use. It is recommended to dry the filament in a dryer at 80°C for at least 12 hours to ensure the success rate and quality of the printed model.

If using PA12-CF as its own support material, remove the support structure after the model has cooled. Otherwise, the support structure may be glued to the model and difficult to remove.

After the model is printed, it is recommended to dry it in a dryer at 80~100°C for 1~3 hours to increase the strength of the model.

Disclaimer:

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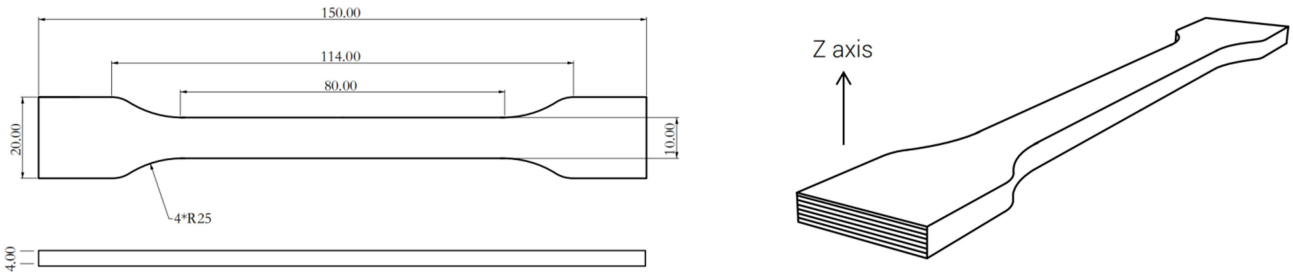
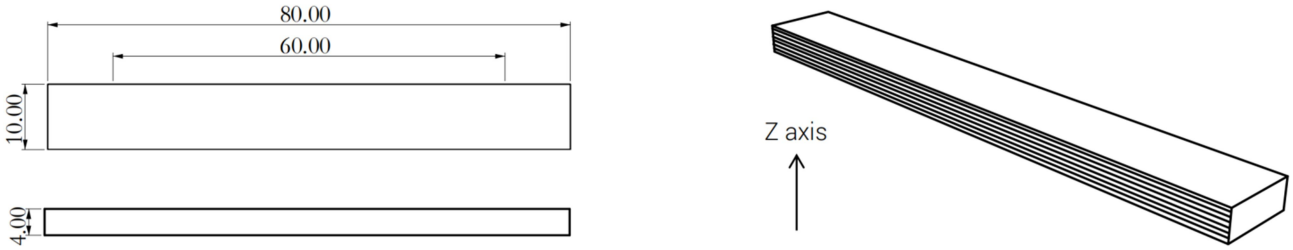
Attachment: Test sample dimensions and printing direction



Tensile testing specimen; ASTM D638 (ISO 527, GB/T 1040)



Flexural testing specimen; ASTMD790 (ISO 178, GB/T 9341)

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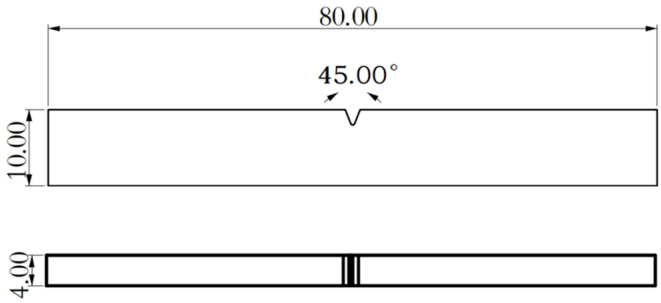

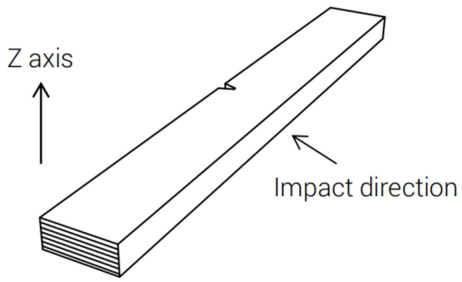

Impact testing specimen; ASTM D256 (ISO 179, GB/T 1043)