ALMA
3D PRINTER FILAMENT

Technical Data Sheet

PPA-GF Filament

PPA-GF is an FFF 3D printing filament, which is produced using LUVOCOM® PPA-GF. It is a modified polyphthalamide (PPA) containing 30% glass fiber, offering high-temperature resistance, high rigidity, and low shrinkage, with the ability to be printable on non-heated chamber FFF 3D printers. Models printed with PPA-GF exhibit excellent tensile and impact strength, with a heat deflection temperature of up to 220°C. It also provides outstanding creep resistance at high temperatures, minimizing the impact of humidity and temperature on dimensional stability and electrical properties.

Features:

High rigidity/High strength/High-temperature resistance/Low creep

Properties:

Physical Properties	**Test Method**	**Units**	**Typical Value**
Density	ISO 1183 ISO	g/cm³	1.31~1.33
Melt Flow Rate (MFR) (280℃/5Kg)	1133 ISO 62	g/10min	35~40
Water Absorption (23℃/24h)		%	＜0.1
Mechanical Properties			
Tensile Strength (X-Y)	ISO 527	Mpa	100~115
Elongation at Break (X-Y)	ISO 527	%	3.5~5
Modulus of Elasticity (X-Y)	ISO 527	Mpa	7000~7800
Bending Strength (X-Y)	ISO178	Mpa	195~215
Bending Strength (Z)	ISO178	Mpa	68.5~71
Bending Modulus (X-Y)	ISO178	Mpa	4710~5010
Bending Modulus (Z)	ISO178	Mpa	2600~2700
Izod Impact Strength (X-Y)	ISO180	KJ/m	9~11
		2	

Izod Impact Strength (Z)	ISO180	KJ/m2	2.5~3
Thermal Properties			
HDT@ 0.455 MPa (66 psi)	ISO75	℃	220
Continuous Service Temperature	IEC 60216	℃	120
Electrical Properties			
Surface Resistance	IEC 60093	Ω	$\leq 10^{12}$

Testing Specimen Printing Conditions:

TestEquipment Nozzle	Guider 3 Ultra (Flashforge)
Diameter Nozzle	0.4mm
Temperature Printing	270 °C
Speed Wall Thickness Infill	200mm/s
Standard Testing Specimen	0.4mm
	100%
	Specific dimensions are shown in Attachment 1.

Recommended Printing Conditions:

Parameter	
Nozzle Temperature	255~275℃ (270℃ recommended)
Build Platform Temperature	80~100℃ (90℃ recommended)
Build Surface Material	Tempered glass, BuildTak, Carbon fiber plate, PEI
Nozzle Diameter	ϕ0.4/0.6mm
Nozzle & Gear Material	Hardened steel
Cooling Fan	0~30%
Layer Thickness	0.2~0.4mm
Printing Speed	60~250mm/s (200mm/s recommended)
Travel Speed	60~500mm/s
Ambient Temperature for Printing	Room temperature~80℃
Retraction Distance	0.5~1.5mm
Retraction Speed	20~40mm/s

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Cautions:

In order to prevent moisture absorption and contamination, supplied packaging should be kept closed and undamaged. For the same reason, partially used filaments should be re-sealed before storage. In case the filament has become wet, it should be dried before being used. Using a hot dry air oven at 120℃ for at least 8 hours is recommended in order to ensure the print success rate and quality. If PPA-GF is used as the support material for itself, please remove the support structure as soon as the model cools down. Otherwise, the support structure can be bonded to the model, which will make the support hard to remove. After the printing process, it is recommended to dry the model in the oven at 80-100°C for 1-3 hours to increase the strength of the model.

Disclaimer:

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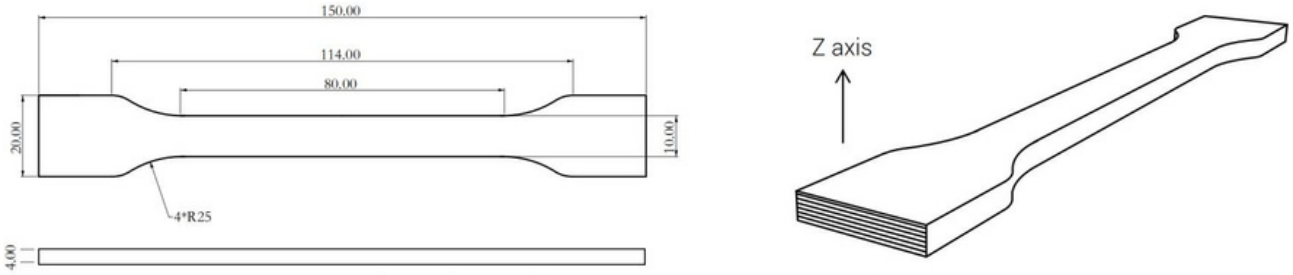
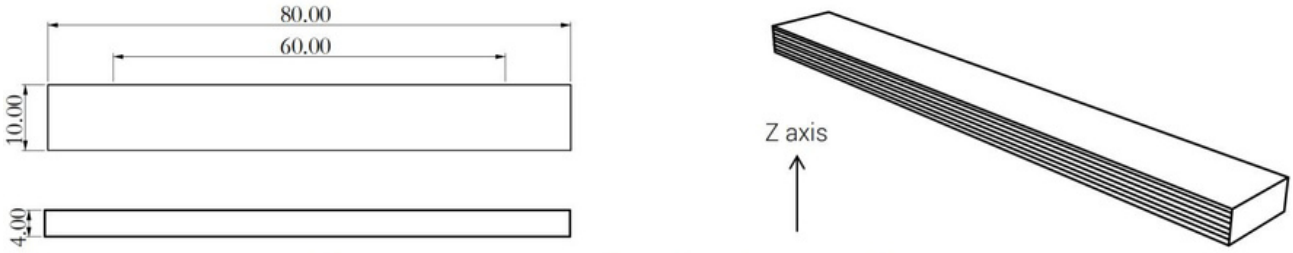
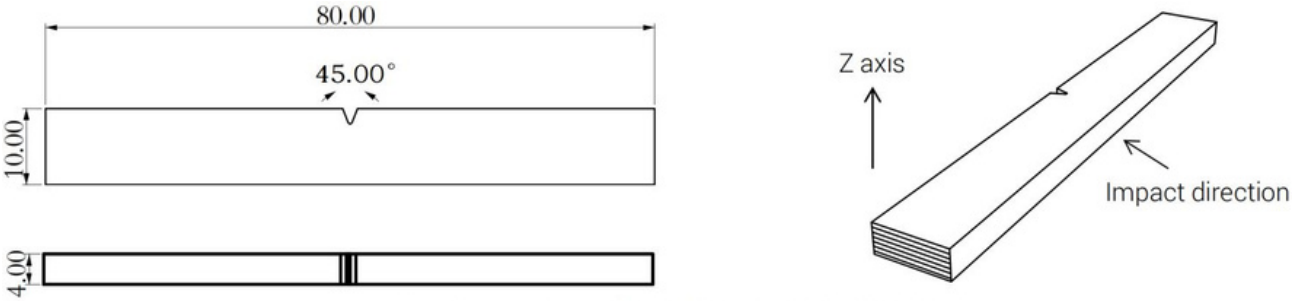
Attachment 1:
Testing Specimen Size and Printing Direction



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



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



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