FLASHFORGE

Technical Data Sheet

PBT-GF Filament

PBT-GF is an FFF 3D printing filament, which is produced using BASF Ultradur® B 4300 G2. PBT-GF is a polyester modified material containing 5-10% glass fiber, characterized by temperature resistance, low shrinkage and easy-to-print property, with the ability to be printable on non-heated chamber FFF 3D printers. It has excellent rigidity and tensile strength, along with good insulation properties, allowing continues use up to 150°C.

Features:

High rigidity/Low warpage/Temperature resistance

Properties:

Physical Properties	Test Method	Units	Typical Value
Density	ISO 1183	g/cm^3	1.32~1.35
Melt Flow Rate (MFR) (250℃/2.16Kg)	ISO 1133	g/10min	15~20
Water Absorption (23℃/24h)	ISO 62	%	< 0.4
Mechanical Properties			
Tensile Strength (X-Y)	ISO 527	Mpa	65~70
Elongation at Break (X-Y)	ISO 527	%	2~3
Modulus of Elasticity (X-Y)	ISO 527	Mpa	3700~4000
Bending Strength (X-Y)	ISO 178	Mpa	100~110
Izod Impact Strength (X-Y)	ISO 180	KJ/m^2	2~3
Thermal Properties			
HDT@ 0.455 MPa（66 psi）	ISO 75	℃	175
Service Temperature (Max. lifespan: 200 hours)		℃	150

Testing Specimen Printing Conditions:

Test Equipment	Guider 3 Ultra (Flashforge)
Nozzle Diameter	0.6mm
Nozzle Temperature	270℃
Printing Speed	80mm/s
Wall Thickness	1.8mm
Infill	100%
Standard Testing Specimen	Specific dimensions are shown in Attachment 1

Recommended Printing Conditions:

Parameter	
Nozzle Temperature	260~280℃ (270℃ recommended)
Build Platform Temperature	100~120℃ (110℃ recommended)
Build Surface Material	Tempered glass, BuildTak, Carbon fiber plate
Nozzle Diameter	ϕ0.4/0.6mm (ϕ0.6mm recommended)
Nozzle & Gear Material	High-strength steel
Cooling Fan	Turn off
Layer Thickness	0.12~0.3mm
Printing Speed	40~100mm/s (80mm/s recommended)
Travel Speed	60~120mm/s
Ambient Temperature for Printing	50~70℃
Retraction Distance	1~2mm
Retraction Speed	40~60mm/s

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 80℃ for at least 12 hours is recommended in order to ensure the print success rate and quality.
If PBT-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 permanently bonded to the model due to excessive moisture absorption, 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℃ for 1-3 hours to increase the strength of the model.

Disclaimer:

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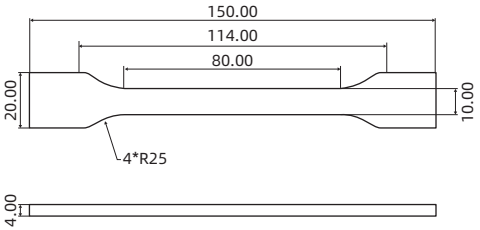
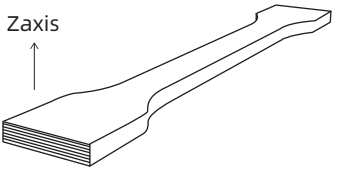
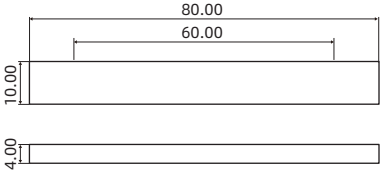
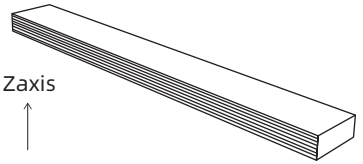
Attachment 1:
Testing Specimen Size and Printing Direction



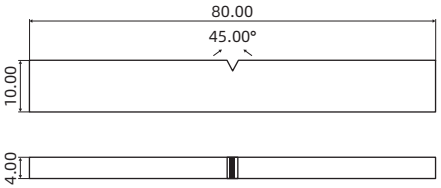


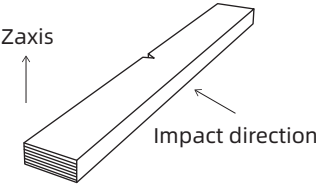
Tensile testing specimen; ASTM D638 (ISO 527, GB/T 1040)





Flexural testing specimen; ASTM D790 (ISO 178, GB/T 9341)





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