Raise3D Industrial PET GF Technical Data Sheet

Raise3D Industrial PET GF is a glass fiber-reinforced composite filament based on PET (Polyethylene terephthalate). Well-dispersed 15% glass fibers enhance the rigidity, strength, heat and chemical resistance of PET matrix. After annealing, PET GF stabilizes its heat resistance at around 120 ℃, tensile modulus and srength of over 4.1 GPa and 70MPa respectively. Compared to glass fiber-reinforced Nylon filament, the high printability, dimensional stability, high creep resistance and low moisture absorption makes PET GF an ideal choice for reliable glass fiber composite printing for strong and cost-effective end-use applications, such as jigs & fixture and functional parts. In addition, PET GF provide multiple color choice.

Filament Specifications

Property	Testing Method	Typical Value
Density (g/cm^3)	ISO 1183, GB/T 1033	1.38
Heat Deflection Temperature (°C)	ISO75 1.8MPa	99
	ISO75 0.45 MPa	120
Melt index (g/10 min)	270 °C, 2.16 kg	5.3
Water absorption	ISO 62: Method 1	0.5%
Odor	/	Almost odorless
Solubility	/	Insoluble in water

Mechanical Properties

Property	Testing Method	Typical value
Young's modulus (X-Y)	ISO 527, GB/T 1040	4130 ± 107 MPa
Young's modulus (Z)	ISO 527, GB/T 1040	3322 ± 94 MPa
Tensile strength (X-Y)	ISO 52 7, GB/T 1040	71 ± 3 MPa
Tensile strength (Z)	ISO 527, GB/T 1040	34 ± 2 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	2.56 ± 0.30 %
Elongation at break (Z)	ISO 527, GB/T 1040	1.14 ± 0.11 %

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Bending modulus (X-Y)	ISO 178, GB/T 9341	3650 ± 66 MPa
Bending strength (X-Y)	ISO 178, GB/T 9341	115 ± 3 MPa
Charpy impact strength (X-Y)	ISO 179, GB/T 1043	6.56 ± 0.68 kJ/m^2

Note:
All testing specimens were printed under the following conditions:
Nozzle temp 320℃，Bed temp 80℃，Print speed 45mm/s, Infill 100%, Infill angle ±45°
All specimens were annealed at 100˚C for 8h.

Note：

1. Dry PET GF at 70-80°C for 8-12 hours before printing, as low moisture content is crucial for final printed part quality.

2. After drying, we recommend to store PET GF filaments into Raise3D Filaments Dry Box during the printing.

3. Abrasion of the brass nozzle happens frequently when printing PET GF. Using abrasion resistance nozzle, such as hardened steel and ruby nozzle, is highly recommended.

4. After the printing, it is recommended to anneal the model in the oven at 80-100°C for 8-12 hours.

5. For a small size model (side length <50 mm), annealing at 80°C for 8 hours is recommended; For a medium-size model (50mm<side length <150 mm), annealing at 80°C for 12 hours is recommended; For a large size model, 100°C for at least 12 hours is recommended.

6. After annealing, a maximum of 0.1 % dimensional shrinkage could be observed along the Z-axis, depending on infill and layer height, and no significant dimensional shrinkage along the XY-axes

7. If PET GF is used as the support material for itself, please remove the support structure after annealing.

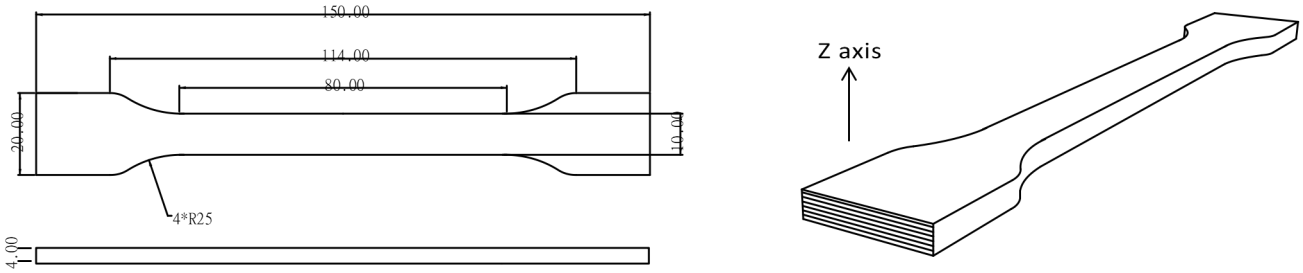

Fig 1. Tensile testing specimen

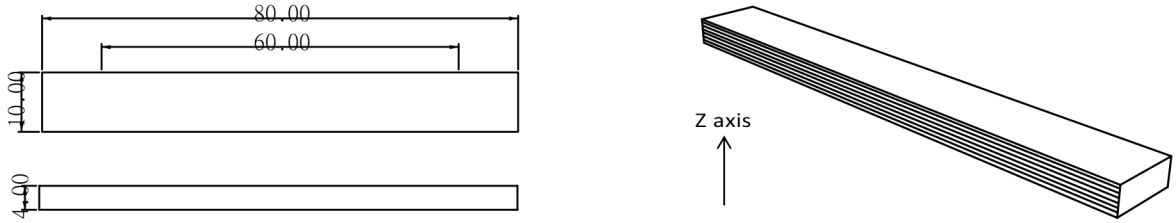

Fig 2. Flexural testing specimen

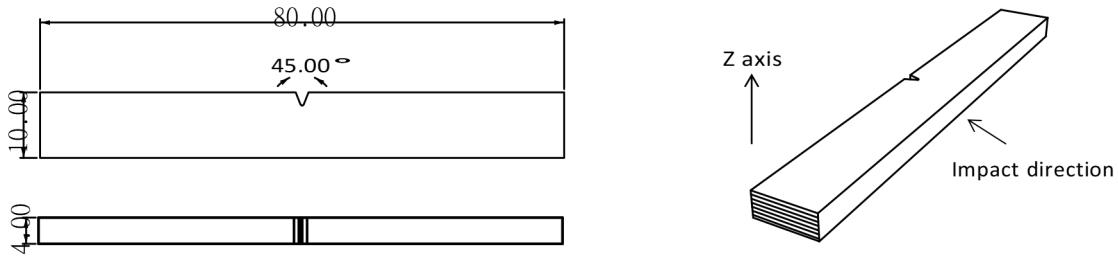

Fig 3. Impact testing specimen

Disclaimer

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End-use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice.

Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/recycling practices of Raise3D materials for the intended application. Raise3D makes no warranty of any kind, unless announced separately, to the fitness for any particular use or application. Raise3D shall not be made liable for any damage, injury or loss induced from the use of Raise3D materials in any particular application.