Raise3D Industrial PPA GF Technical Data Sheet

Raise3D Industrial PPA GF is glass fiber reinforced composite filament material based on PPA (polyphthalamide or high-performance/high-temperature Nylon). PPA is distinguished from aliphatic polyamides (e.g.PA6) by higher melting point, glass transition temperature (Tg), lower moisture absorption, and greater dimensional stability. The incorporation of short glass fibers (15wt.%) further improves upon the properties of PPA matrix, which makes PPA GF printed parts popular for end-use applications in automotive, aerospace, electrical and electronics (E&E) industry with excellent performance-price ratio.

Filament Specifications

Property	Testing Method	Roundnes Typical Value s
Density (g/cm^3 at 21.5 °C)	ISO 1183	1.16
Heat Deflection Temperature (°C)	ISO75 1.8MPa ISO75 0.45 MPa	101 147
Melting Temperature	ISO 11357	225
Melt index (g/10 min)	280 °C, 2.16 kg	15
Moisture content (%)	ISO 62: Method 1	0.6
Odor	/	Almost odorless
Solubility	/	Insoluble in water

Mechanical Properties (Conditioned)

Property	Testing Method	Typical value
Young's modulus (X-Y)	ISO 527	4850 ± 200 MPa
Tensile strength (X-Y)	ISO 527	89 ± 3 MPa
Elongation at break (X-Y)	ISO 527	2.2 ± 0.1%
Mono-layer Z-axis tensile strength	Custom method	30.0 ± 1.4 MPa
Bending modulus (X-Y)	ISO 178	4580 ± 150 MPa
Bending strength (X-Y)	ISO 178	143 ± 12 MPa
Charpy impact strength (X-Y)	ISO 179	6.0 ± 1.0 kJ/m^2

All specimens were annealed at 100°C for 8h, and immerged in ambient temperature for 3 days prior to testing.

RAISE3D

3D-MODEL

Note:

1. Abrasion of the brass nozzle happens frequently when printing PPA GF. Using abrasion resistance nozzle, as hardened steel and above grade nozzle is highly recommended.

2. Please dry the filament at 80-100°C for 6-12 hours to restore the printing quality of Raise3D Industrial PPA GF.

3. After drying, we recommend to store PPA GF filament into Raise3D Filament Dry Box during the printing.

4. After the printing, it is recommended to anneal the printed part at 80-100°C for 8 hours.

5. After annealing, max. 0.5% dimensional shrinkage could be observed in Z-axis depending on infill and layer height, no obvious dimensional shrinkage in XY-axis.

6. If PPA GF is used as the support material for itself, please remove the support structure after annealing. Otherwise, the support structure could be permanently bonded to the model after moisture absorption.

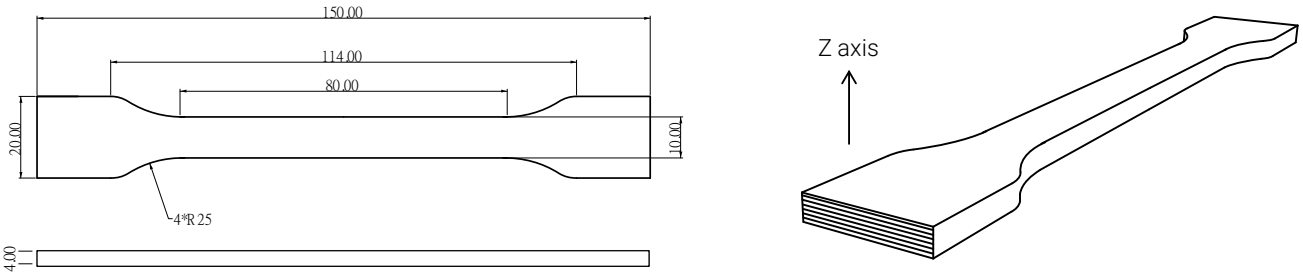

Fig 1. Tensile testing specimen

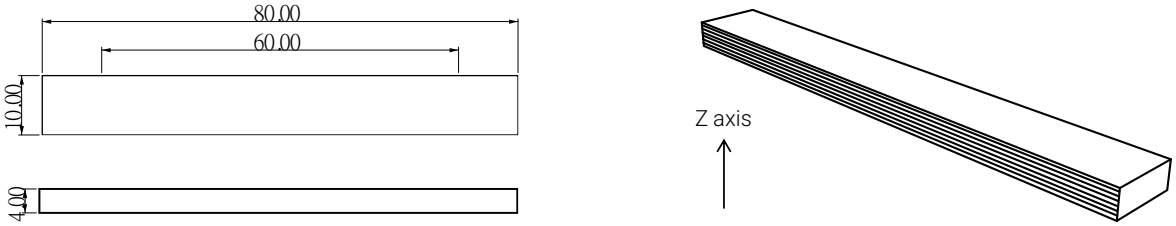

Fig 1. Flexural testing specimen

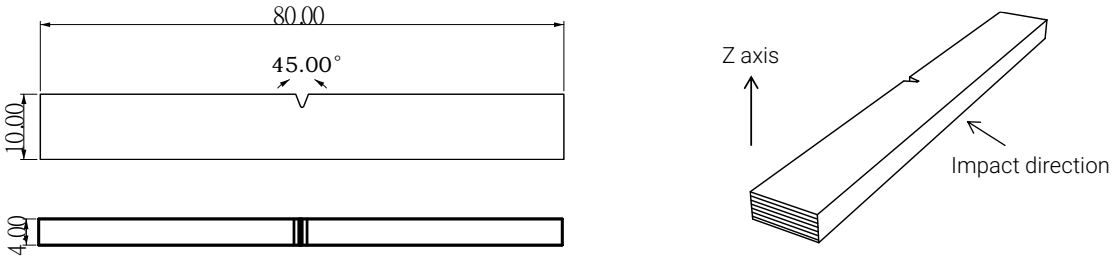

Fig 1. Impact testing specimen

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.