

RDG120N12PC10A

Technical Data Sheet (Ver. 1.0, last updated: August, 2020)

RDG120N12PC10A is 10% carbon fiber reinforced PA12 filament, which provides improved surface quality, strength and warping.

Physical Properties¹

Property	Testing Method	Typical Value
Density (g/cm ³ at 21.5 °C)	ASTM D792 (ISO 1183, GB/T 1033)	1.06
Melt index (g/10 min)	280 °C, 2.16 kg	25
Heat Deflection Temperature (°C)	ISO75 1.8MPa	105
	0.45MPa	131

1. Tested with 3D printed specimen of 100% infill
2. Specimen annealed at 100°C for 4hours

Mechanical Properties^{1,2}

Property	Testing Method	Typical Value
Young's modulus (MPa) (X - Y)	ASTM D638 (ISO 527, GB/T 1040)	3304.39 ± 145
Tensile strength (MPa) (X - Y)	ASTM D638 (ISO527, GB/T 1040)	71.63 ± 1.67
Elongation at break (%) (X - Y)	ASTM D638 (ISO527, GB/T 1040)	3.57 ± 0.25
Bending modulus (MPa) (X - Y)	ASTM D790 (ISO 178, GB/T 9341)	3535 ± 239
Bending strength (MPa) (X - Y)	ASTM D790 (ISO 178, GB/T 9341)	109.97 ± 1.38
Charpy Impact strength (kJ/m ²) (X - Y)	ASTM D256 (ISO 179, GB/T 1043)	12.52 ± 0.68

1. All testing specimens were printed under the following conditions:

Nozzle temperature = 280 °C, printing speed = 45 mm/s, bed temperature = 50 °C

2. All specimens were annealed at 100 °C for 6h and conditioned at room temperature for 24h prior to testing

Recommended Printing Conditions¹

Parameter	Recommended Setting
Nozzle temperature (°C)	260 - 300
Recommended build surface	Coating with PVP glue
Build plate temperature (°C)	50 - 70
Model cooling fan	Turned off - 20%
Printing speed (mm/s)	30 - 60
Recommended environmental temperature (°C)	Room temp – 50
Other Comments	
<ul style="list-style-type: none"> It is recommended to use hardening steel nozzle, tungsten steel or ruby nozzle to avoid nozzle abrasion. After the printing, it is recommended to anneal the models at 80 - 100°C for 4 - 6 hours. 	

1. Based on 0.4 mm nozzle and Simplify 3D.

Printing conditions may vary with different nozzle diameters

Appendix: Testing Geometries

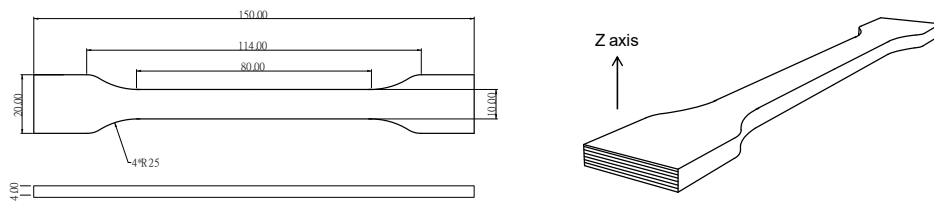


Fig 1. Tensile testing (X-Y) specimen

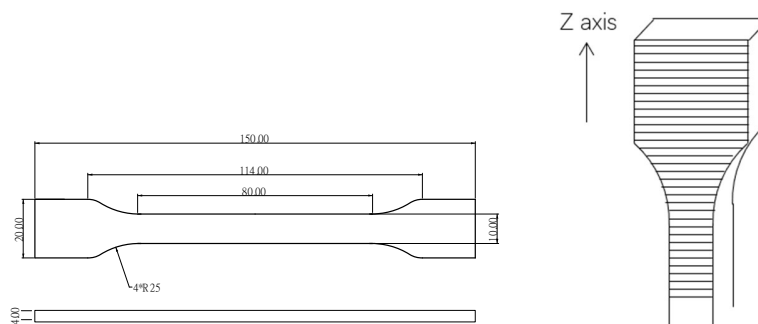


Fig 2. Tensile testing (Z) specimen

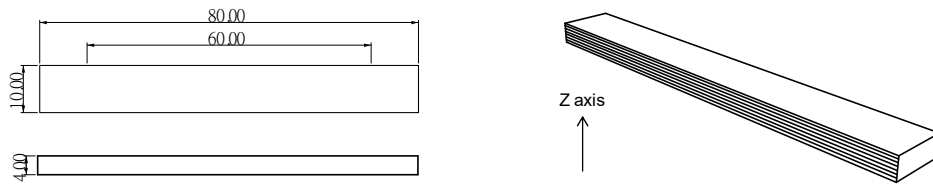


Fig 3. Flexural testing specimen

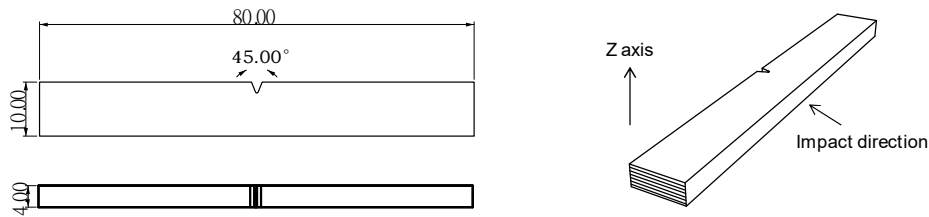


Fig 4. Impact testing specimen

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.

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