Raise3D Premium PC Technical Data Sheet

Raise3D Premium PC is an advanced polycarbonate (PC) filament with superior printability and mechanical properties, particularly fracture toughness.

Physical Properties

Property	Testing Method	Typical Value
Density	ISO 1183, GB/T 1033	1.18 – 1.20 (g/cm³ at 21.5°C)
Glass transition temperature	DSC, 10°C /min	113 (°C)
Vicat Softening temperature	ISO 306 GB/T 1633	117 (°C)
Melt index	260 °C, 1.2 kg	6 - 8 (g/10 min)
Decomposition temperature	TGA, 20 °C/min	>360 (°C)
Heat distortion temperature	ISO 75@1.8 MPa	99 (°C)
Heat distortion temperature	ISO 75@0.45 MPa	114 (°C)

Note:

Tested with 3D printed specimen of 100% infill.

Mechanical Properties

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2048 ± 66 (MPa)
Tensile strength (X-Y)	ISO 527, GB/T 1040	60 ± 1.8 (MPa)
Elongation at break (X-Y)	ISO 527, GB/T 1040	12.2 ± 1.4 (%)
Bending modulus	ISO 178, GB/T 9341	2044 ± 55 (MPa)
Bending strength	ISO 178, GB/T 9341	94 ± 1 (MPa)
Charpy impact strength	ISO 179, GB/T 1043	25 ± 2 (kJ/m2)
Tensile strength (Z)	ISO 527, GB/T 1040	29 ± 4 (MPa)

All testing specimens were printed under the following conditions:
nozzle temperature = 255 °C, printing speed = 60 mm/s, build plate temperature = 100 °C, infill = 100% All specimens were conditioned at room temperature for 24h prior to testing .

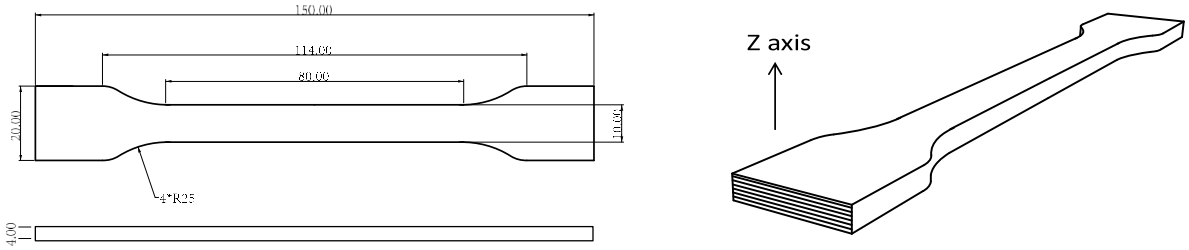
Recommended printing conditions

Parameter	Recommended Setting
Nozzle temperature	250 - 270 (°C)
Build Surface material	BuildTak® recommended
Build surface treatment	Magigoo PC
Build plate temperature	90 - 105 (°C)
Cooling fan	Turned off
Printing speed	30 - 50 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	1 (mm)
Retraction speed	20 (mm/s)
Recommended environmental temperature	70 – 80 (recommended) (°C)
Threshold overhang angle	50 (˚)

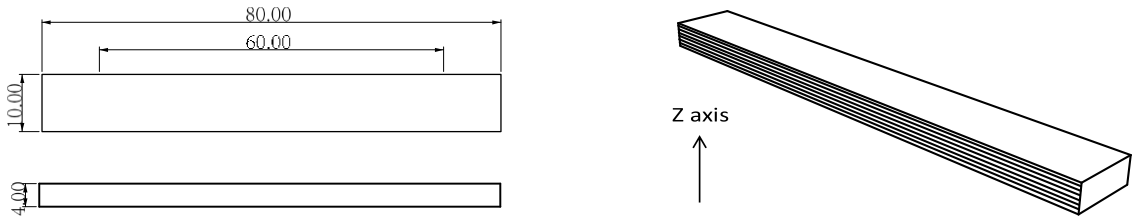
Based on 0.4 mm nozzle and ideaMaker. Printing conditions may vary with different nozzle diameters.

Note:
After the printing, it is recommended to anneal the model in the oven at 100°C for 2 hours.

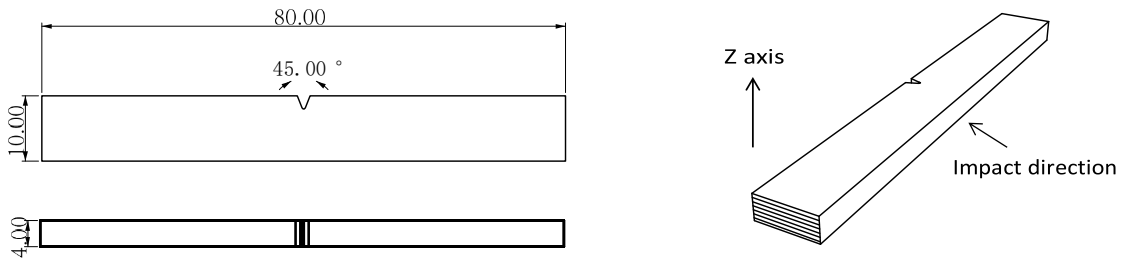
Testing Geometries



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)

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 use or application. Raise3D shall not be made liable for any damage, injury or loss induced from the use of Raise3D materials in any application.