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	ASTM D792 (ISO 1183, GB/T 1033)	1.18 – 1.20 (g/cm^3 at 21.5˚C)
Glass transition temperature	DSC, 10 ℃/min	113 (°C)
Vicat Softening temperature	ASTM D1525 (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	127 - 130 (˚C)

Tested with 3D printed specimen of 100% infill

Mechanical Properties

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	2048 ± 66 (MPa)
Tensile strength (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	59.7 ± 1.8 (MPa)
Elongation at break (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	12.2 ± 1.4 (%)
Bending modulus	ASTM D790 (ISO 178, GB/T 9341)	2044 ± 55 (MPa)
Bending strength	ASTM D790 (ISO 178, GB/T 9341)	94.1 ± 0.9 (MPa)
Charpy impact strength	ASTM D256 (ISO 179, GB/T 1043)	25.1 ± 1.9 (kJ/m^2)
Tensile strength (Z)	ASTM D638 (ISO 527, GB/T 1040)	29.1 ± 4.1 (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

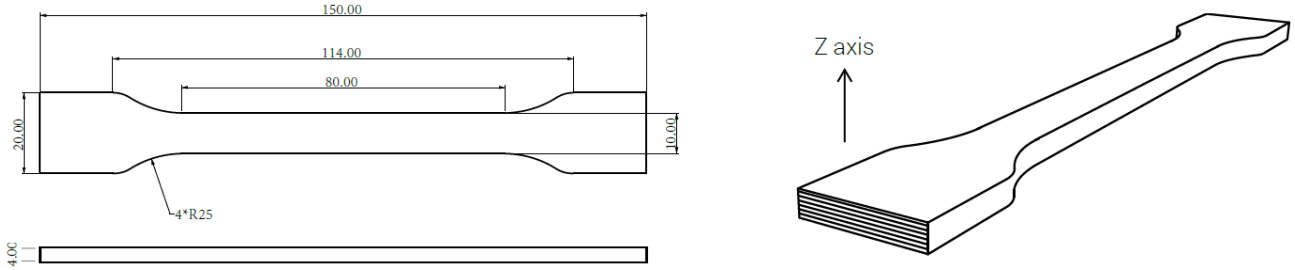
Recommended printing conditions

Parameter	
Nozzle temperature	250 - 270 (˚C)

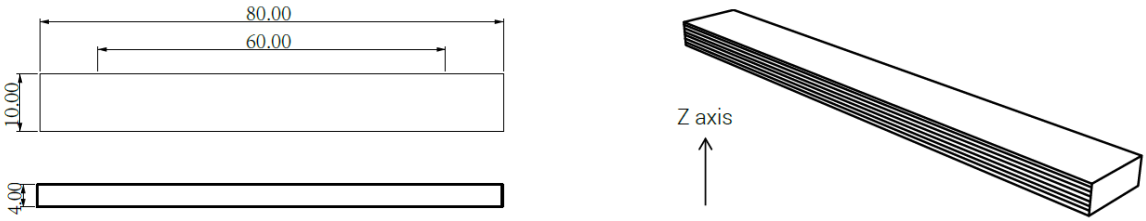
Build Surface material	BuildTak® recommended
Build surface treatment	None
Build plate temperature	80 - 105 (˚C)
Cooling fan	Turned off
Printing speed	60 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	1 (mm)
Retraction speed	20 (mm/s)
Recommended environmental temperature	70 – 80 (recommended) (˚C)
Threshold overhang angle	60 (˚)

Based on 0.4 mm nozzle and Simplify 3D v.3.1. Printing conditions may vary with different nozzle diameters.

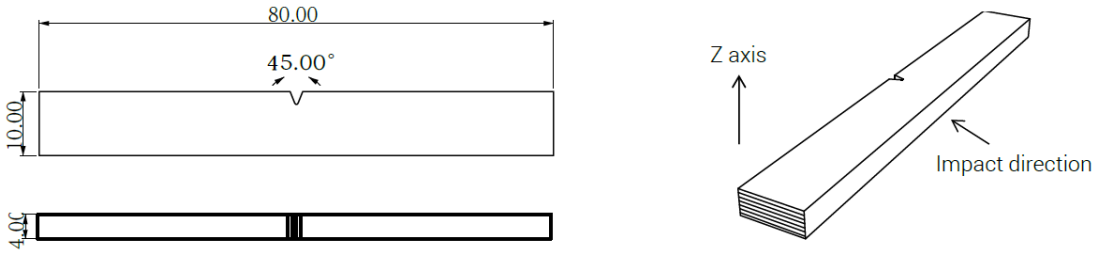
Testing Geometries



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.