

## PolyMax™ PC

PolyMax™ PC is an engineered PC filament combining excellent strength, toughness, heat resistance and printing quality. It is the ideal choice for a wide range of engineering applications.

### Physical Properties

Property	Testing method	Typical value
Density	ASTM D792 (ISO 1183, GB/T 1033)	1.18 - 1.20 (g/cm <sup>3</sup> at 21.5 °C)
Glass transition temperature	DSC, 10 °C/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	ASTMD790 (ISO 178, GB/T 9341)	2044 ± 55 (MPa)
Bending strength	ASTMD790 (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 <sup>2</sup> )
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

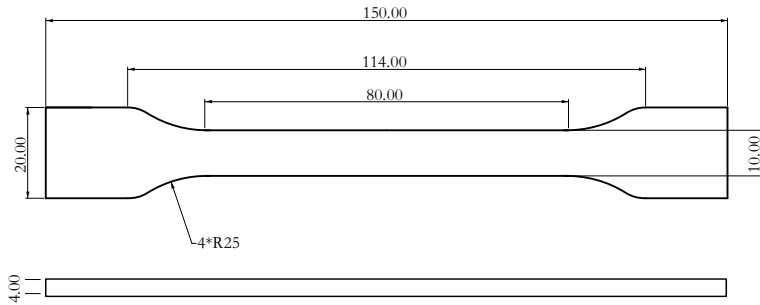
Parameter	
Nozzle temperature	250 - 270 (°C)
Build Surface material	BuildTak®, Glass, PEI
Build surface treatment	Magigoo PC
Build plate temperature	90 - 105 (°C)
Cooling fan	Turned off
Printing speed	30v- 50 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	1 (mm)
Retraction speed	20 (mm/s)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

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

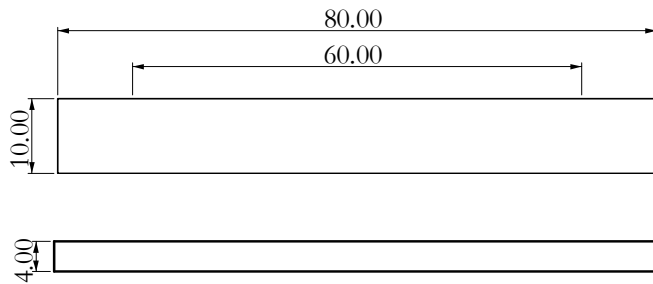
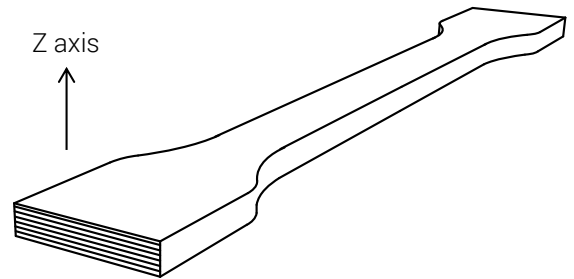
When printing with PolyMax™ PC it is recommended to use an enclosure. For large part it is recommended to use a heated chamber.

It is recommended to anneal the printed part right after the printing process to release the residual internal stress.

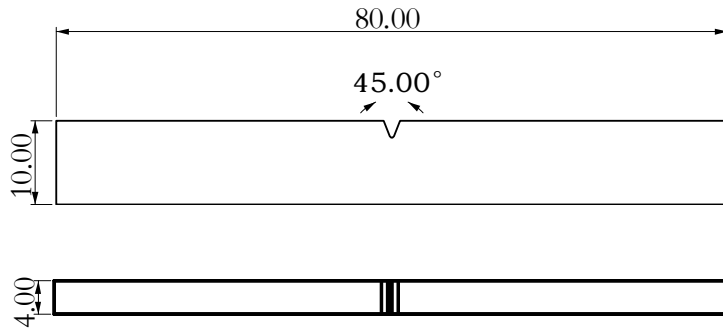
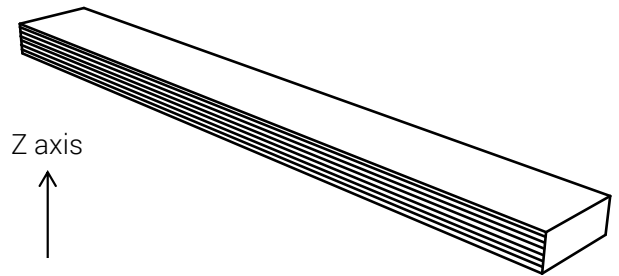
Annealing settings: 100 °C for 2h



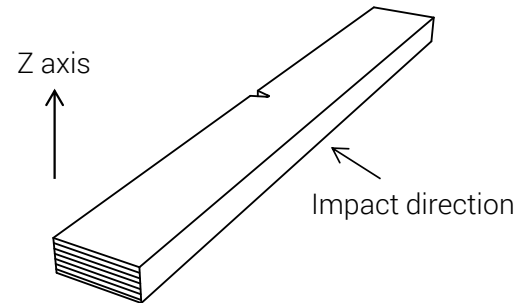
Tensile testing specimen; ASTM D638 (ISO 527, GB/T 1040)



Flexural testing specimen; ASTM D790 (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.

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