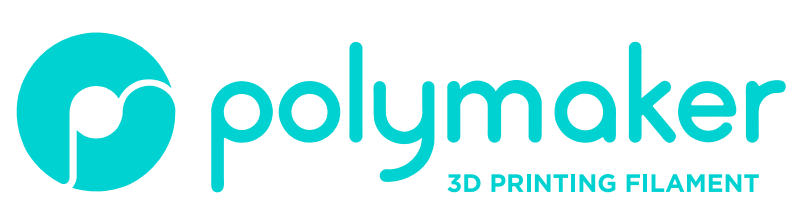


TECHNICAL DATA SHEET



V1.2



Polymaker™ HT-PLA-GF

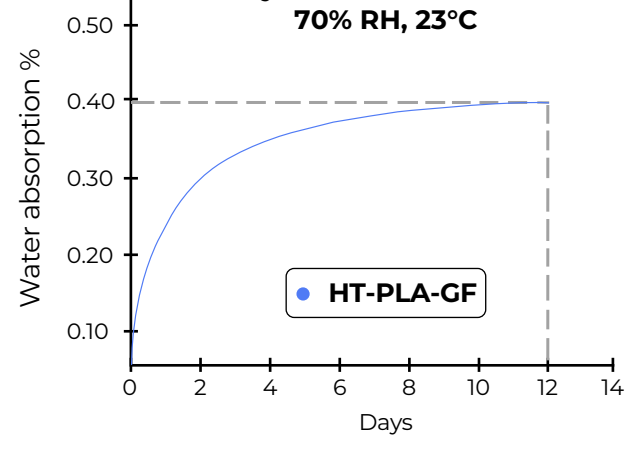
Polymaker™ HT-PLA-GF offers improved heat resistance after annealing while maintaining PLA's ease of printing. It's ideal for applications requiring high thermal stability, withstanding mechanical stress and temperatures up to 100°C.

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PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.34 g/cm ³ at 23°C
Melt index	210°C, 2.16kg	22.9g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

MOISTURE ABSORPTION CURVE



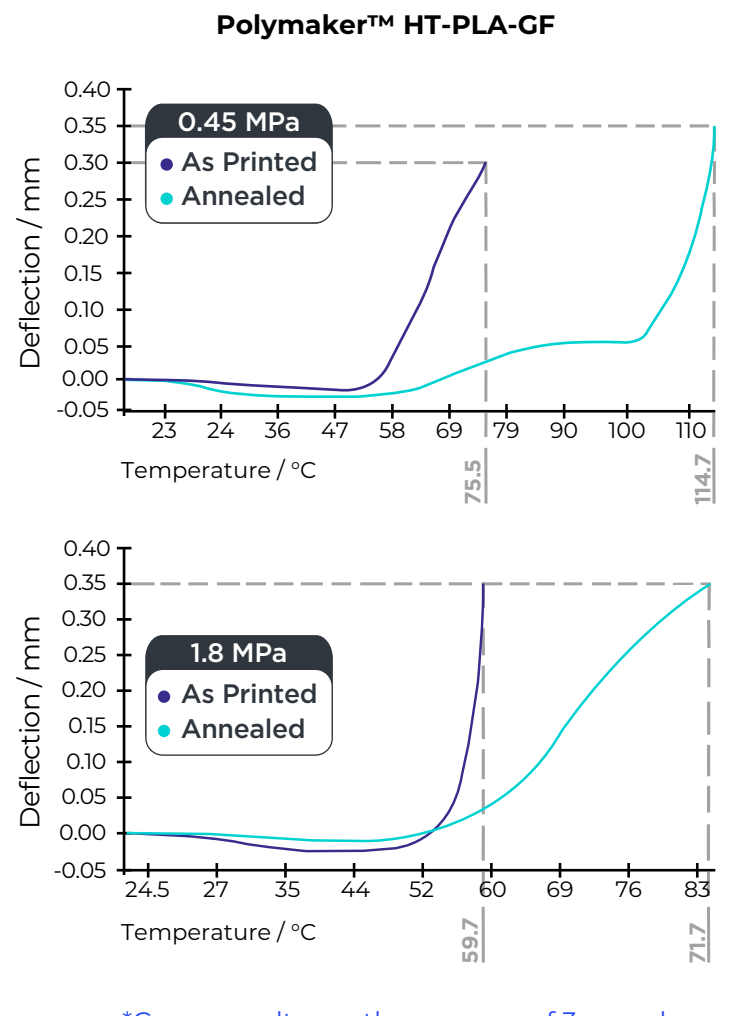
DIMENSIONAL PERFORMANCE

PROPERTY	TYPICAL VALUE
Shrinkage (X-Y)	0.05%
Shrinkage (Z)	0.05%
Shrinkage (D)	0.10%

THERMAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Glass transition temp.	DSC, 10°C/min	59.76°C
Melting temp.	DSC, 10°C/min	174.87°C
Crystallization temp.	DSC, 10°C/min	81.56°C
Decomposition temp.	TGA, 20°C/min	348.15°C
Vicat softening temp.	ISO 306, GB/T 1633	148.9°C (as printed)
Heat deflection temp.	ISO 75, 1.8MPa	59.7°C (as printed)
Heat deflection temp.	ISO 75, 0.45MPa	75.5°C (as printed)
Vicat softening temp.	ISO 306, GB/T 1633	148.3°C (annealed)
Heat deflection temp.	ISO 75 1.8MPa	84°C (annealed)
Heat deflection temp.	ISO 75, 0.45MPa	114.7°C (annealed)

HDT CURVE



*Curve results are the average of 3 samples

MECHANICAL PROPERTIES (as printed)

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	3793.85 ± 129.17 MPa
Young's modulus (Z)	ISO 527, GB/T 1040	3018.1 ± 83.42 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	50.09 ± 0.73 MPa
Tensile strength (Z)	ISO 527, GB/T 1040	23.68 ± 1.28 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	2.77 ± 0.45%
Elongation at break (Z)	ISO 527, GB/T 1040	0.85 ± 0.05%
Bending modulus (X-Y)	ISO 178, GB/T 9341	3684.87 ± 115.49 MPa
Bending modulus (Z)	ISO 178, GB/T 9341	2197.76 ± 269.42
Bending strength (X-Y)	ISO 178, GB/T 9341	86.41 ± 1.38 MPa
Bending strength (Z)	ISO 178, GB/T 9341	29.21 ± 1.42 MPa
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	5.31 ± 0.46 kJ/m ²
Notched Charpy impact strength (Z)	ISO 179, GB/T 1043	4.28 ± 0.18 kJ/m ²

MECHANICAL PROPERTIES (after annealing)

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	4206.91 ± 182.01 MPa
Young's modulus (Z)	ISO 527, GB/T 1040	3052.15 ± 101.57 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	50.2 ± 0.93 MPa
Tensile strength (Z)	ISO 527, GB/T 1040	22.46 ± 1.54 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	2.3 ± 0.2%
Elongation at break (Z)	ISO 527, GB/T 1040	0.79 ± 0.07%
Bending modulus (X-Y)	ISO 178, GB/T 9341	3948.4 ± 67.03 MPa
Bending modulus (Z)	ISO 178, GB/T 9341	1953.62 ± 260.81 MPa
Bending strength (X-Y)	ISO 178, GB/T 9341	87.76 ± 1.96 MPa
Bending strength (Z)	ISO 178, GB/T 9341	29.17 ± 2.69
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	4.92 ± 0.5 MPa
Notched Charpy impact strength (Z)	ISO 179, GB/T 1043	4.37 ± 0.27 MPa

CHEMICAL RESISTANCE DATA

PROPERTY	TYPICAL VALUE
Effect of weak acids	Good
Effect of strong acids	Poor
Effect of weak alkalis	Fair
Effect of strong alkalis	Poor
Effect of oils and grease	Good

Good: Material may get minor attack after long periods of storage with chemical at ambient temperature

Fair: Material can be used for short time contact with chemicals at ambient temperature

Poor: Material becomes unstable on contact with chemical at ambient temperature

RECOMMENDED PRINTING CONDITIONS

Nozzle temperature	210-230°C
Build plate temperature	25-60°C
Build surface treatment	PC and Textured PEI
Cooling fan	ON
Closure chamber	Not Needed
Printing Speed	Up to 350mm/s

Drying temp. and time	60°C/6H
Annealing temp.	80-100°C (Recommended 100°C)
Annealing time	20-30 Mins (Recommended 30 mins)
Retraction distance	1-3 (mm)
Retraction Speed	20-40 (mm/s)
Additional requirements	Hardened nozzle & print annealing

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



PolyBox™ or PolyDryer™ Box

NOTE

It is highly recommended to use the PolyBox™ or PolyDryer™ Box when printing or storing Polymaker™ HT-PLA-GF

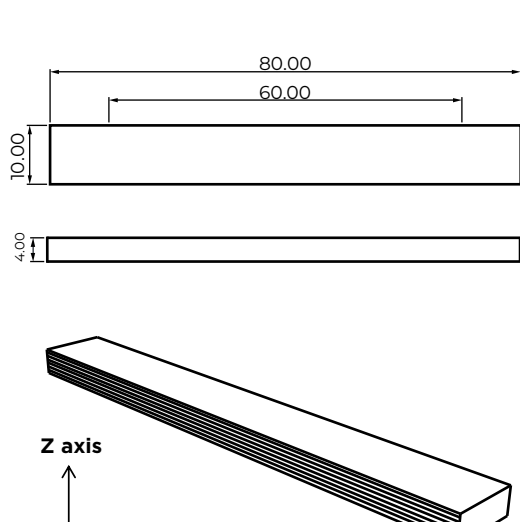
HOW TO MAKE SPECIMENS

Printing temperature	230°C
Bed temperature	50°C
Top & bottom layer	3
Environmental Temperature	Ambient

Infill	100%
Shell	2
Cooling fan	ON

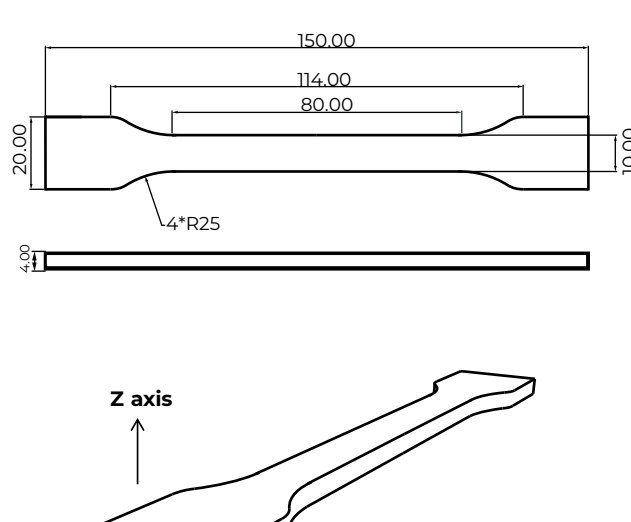
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



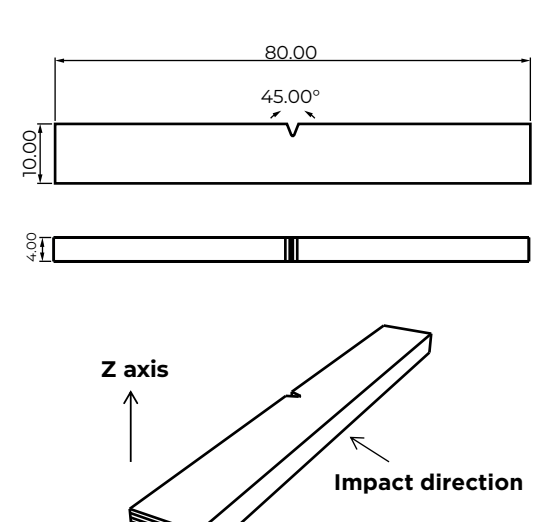
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



*Based on testing with Polymaker™ HT-PLA-GF Grey (SKU: PA18003)

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 Polymaker™ materials for the intended application. Polymaker™ makes no warranty of any kind, unless announced separately, to the fitness for any use or application. Polymaker™ shall not be made liable for any damage, injury or loss induced from the use of Polymaker™ materials in any application.