TECHNICAL DATA SHEET

V1.3

polymaker
3D PRINTING FILAMENT



Polymaker™ HT-PLA

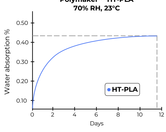
Polymaker™ HT-PLA sets a new standard for heat-stable 3D printing, maintaining its shape at high temperatures (up to 150°C) without sagging or deforming under its own weight. Enjoy the ease of printing and eco-friendliness of PLA—no post-processing required.

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PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.29 g/cm ^{3} at 23°C
Melt index	210°C, 2.16 kg	22.6 g/10min

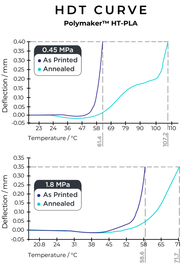
MOISTURE ABSORPTION CURVE



THERMAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE	
Glass transition temp.	DSC, 10°C/min	59.8°C	
Melting temp.	DSC, 10°C/min	177.23°C	
Crystallization temp.	DSC, 10°C/min	77.21°C	
Decompostition temp.	TGA, 20°C	335.94°C	
Viact Softening temp.	ISO 306,GB/T 1633	156.2°C	(as printed)
Heat deflection temp.	ISO 75, 1.8MPa	58.6°C	(as printed)
Heat deflection temp.	ISO 75, 0.45MPa	61.4°C	(as printed)
Viact Softening temp.	ISO 306, GB/T 1633	155.2°C	(annealed)
Heat deflection temp.	ISO 75, 1.8MPa	71.7°C	(annealed)
Heat deflection temp.	ISO 75, 0.45MPa	107.2°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) Young's modulus (Z)	ISO 527, GB/T 1040	2945.75 ± 77.35 MPa 2596.43 ± 160.44 MPa
Tensile strength (X-Y) Tensile strength (Z)	ISO 527, GB/T 1040	42.86 ± 0.76 MPa 20.83 ± 0.51 MPa
Elongation at break (X-Y) Elongation at break (Z)	ISO 527, GB/T 1040	2.80 ± 0.26% 0.97 ± 0.05%
Bending modulus (X-Y) Bending modulus (Z)	ISO 178, GB/T 9341	2893.46 ± 53.15 MPa 2411.22 ± 139.22 MPa
Bending strength (X-Y) Bending strength (Z)	ISO 178, GB/T 9341	74.04 ± 0.66 MPa 29.39 ± 1.18 MPa
Notched charpy impact strength (X-Y) Notched charpy impact strength (Z)	ISO 179, GB/T 1043	4.94 ± 0.31 kJ/m ^{2} 4.50 ± 0.11 kJ/m ^{2}

MECHANICAL PROPERTIES (after annealing)

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y) Young's modulus (Z)	ISO 527, GB/T 1040	3267.16 ± 66.41 MPa 2596.43 ± 160.44 MPa
Tensile strength (X-Y) Tensile strength (Z)	ISO 527, GB/T 1040	42.86 ± 160.44 MPa 18.82 ± 0.98 MPa
Elongation at break (X-Y) Elongation at break (Z)	ISO 527, GB/T 1040	1.87 ± 0.09% 0.81 ± 0.08%
Bending modulus (X-Y) Bending modulus (Z)	ISO 178, GB/T 9341	2960.42 ± 46.91 MPa 2411.22 ± 139.22 MPa
Bending strength (X-Y) Bending strength (Z)	ISO 178, GB/T 9341	66.75 ± 0.51 MPa 28.95 ± 1.44 MPa
Notched Charpy impact strength (X-Y) Notched Charpy impact strength (Z)	ISO 179, GB/T 1043	4.67 ± 0.20 kJ/m ^{2} 4.39 ± 0.18 kJ/m ^{2}

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 300mm/s
Drying temp. and time	60°C/6H
Retraction distance	1-3 (mm)
Retraction Speed	20-40 (mm/s)

*Based on 0.4mm nozzle. Printing conditions may vary with different nozzle diameters.
NOTE: For higher temp. stability, you can anneal this material for 30 mins. @ 80-90°C.



PolyBox™ or PolyDryer™ Box

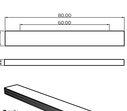
NOTE
It is highly recommended to use the PolyBox™ or PolyDryer™ Box when printing or storing Polymaker™ HT-PLA.

HOW TO MAKE SPECIMENS

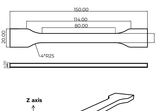
Printing temperature	230°C
Bed temperature	50°C
Top & bottom layer	3
Environmental Temperature	Ambient

Infill	100%
Shell	2
Cooling fan	ON

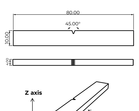
FLEXURAL TESTING SPECIMEN
ISO 178, GB/T 9341



TENSILE TESTING SPECIMEN
ISO 527, GB/T 1040



IMPACT TESTING SPECIMEN
ISO 179, GB/T 1043



*Based on testing with Polymaker™ HT-PLA Grey (SKU: PA17003)

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.