

Technical Data Sheet

PolyTerra™ PLA

www.polymaker.com

V5.4



PolyTerra™
PLA

PolyTerra™ PLA is a bioplastic based 3d printing filament designed from the ground up to create the next generation of PLA, providing ease of use, printing quality, speed and reliability.

PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.31g/cm ³ at 23°C
Melt index	210°C, 2.16kg	14-20 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

CHEMICAL RESISTANCE DATA

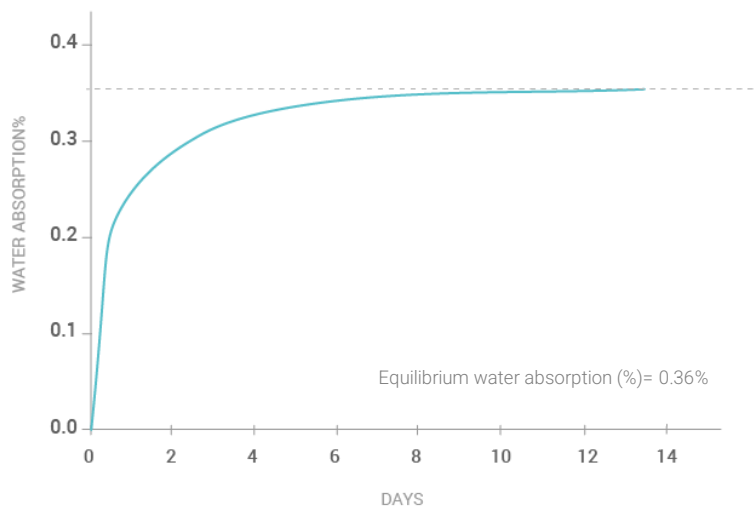
Property	Typical Value
Effect of weak acids	Good
Effect of strong acids	Poor
Effect of weak alkalis	Fair
Effect of strong alkalis	Poor
Effect of oils and grease	Good

Note:

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

MOISTURE ABSORPTION CURVE

PolyTerra™ PLA
70%RH - 23°C

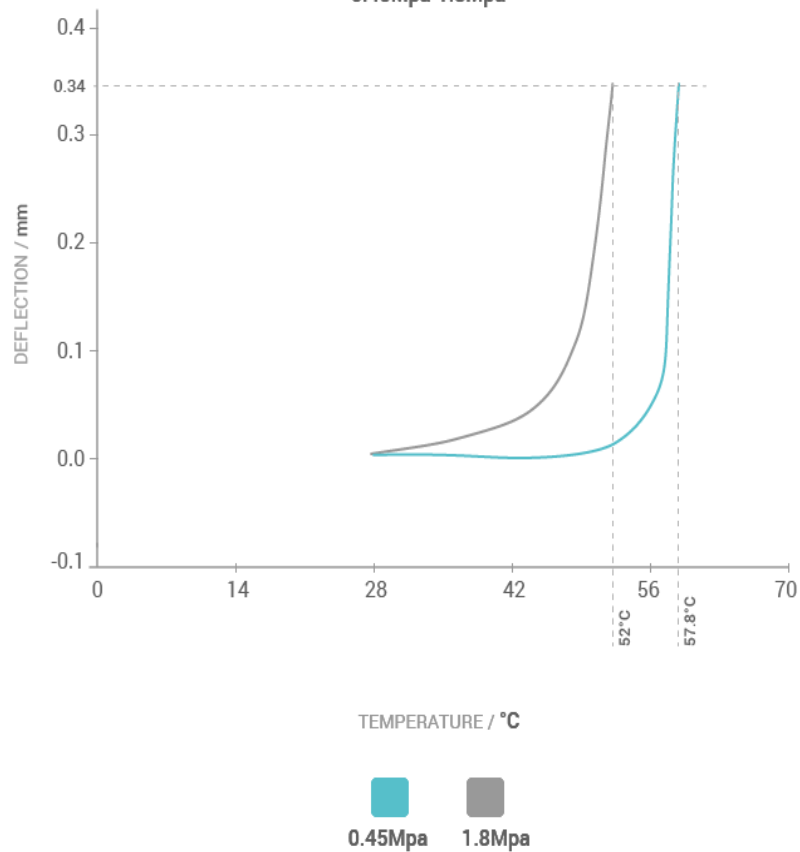


THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	61 °C
Melting temperature	DSC, 10°C/min	163 °C
Decomposition temperature	TGA, 20°C/min	N/A
Vicat softening temperature	ISO 306, GB/T 1633	63 °C
Heat deflection temperature	ISO 75 1.8MPa	52°C
Heat deflection temperature	ISO 75 0.45MPa	58°C

HDT CURVE

PolyTerra™ PLA
0.45Mpa-1.8Mpa



MECHANICAL PROPERTIES

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	1997 ± 64 MPa
Young's modulus (Z)		1615 ± 54 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	23.2 ± 0.5 MPa
Tensile strength (Z)		12.2 ± 0.7 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	27.8 ± 2.4 %
Elongation at break (Z)		0.9 ± 0.1 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2209 ± 75 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	40.4 ± 1.1 MPa
Bending strength (Z)		N/A
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	6.7 ± 0.5 kJ/m ²
Notched Charpy impact strength (Z)		N/A

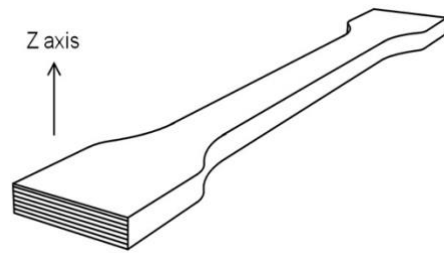
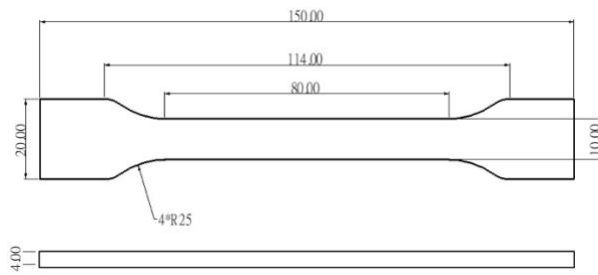
RECOMMENDED PRINTING CONDITIONS

Parameter	
Nozzle temperature	190 – 230 (°C)
Build surface treatment	PC and Texture PEI (Glue when needed)
Build plate temperature	25 - 50 (°C)
Cooling fan	ON
Printing speed	50 - 300 (mm/s)
Retraction distance	1 - 3 (mm)
Retraction speed	20 - 40 (mm/s)
Closure Chamber	No Needed
Recommended support material	PolySupport™ and PolyDissolve™ S1
Drying setting	55°C for 6h
Annealing setting	-

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

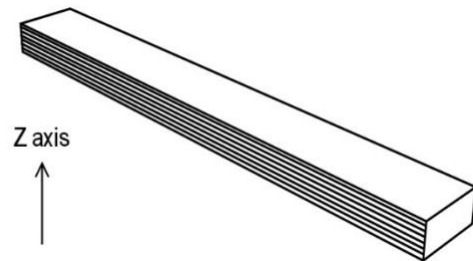
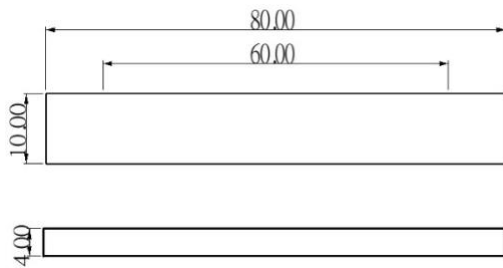
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



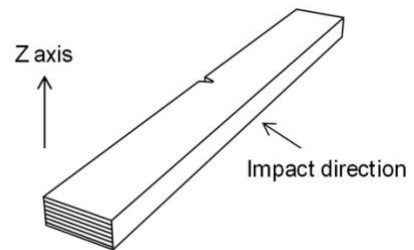
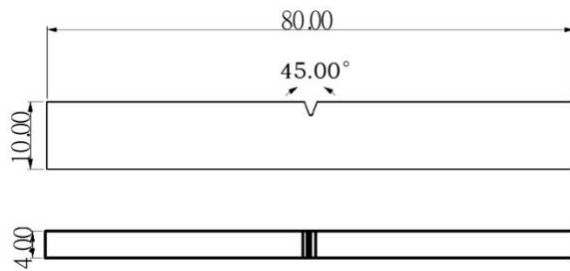
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



HOW TO MAKE SPECIMENS

Printing temperature	230 °C
Bed temperature	50 °C
Shell	2
Top & bottom layer	3
Infill	100 %
Environmental temperature	Ambient temperature
Cooling fan	ON

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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