

## *Technical Data Sheet*

# *PolyTerra™ PLA+*

[www.polymaker.com](http://www.polymaker.com)

V5.3



**PolyTerra™  
PLA+**

PolyTerra™ PLA+ filament contains organic material than ordinary PLA which brings better layer adhesion and extra toughness.

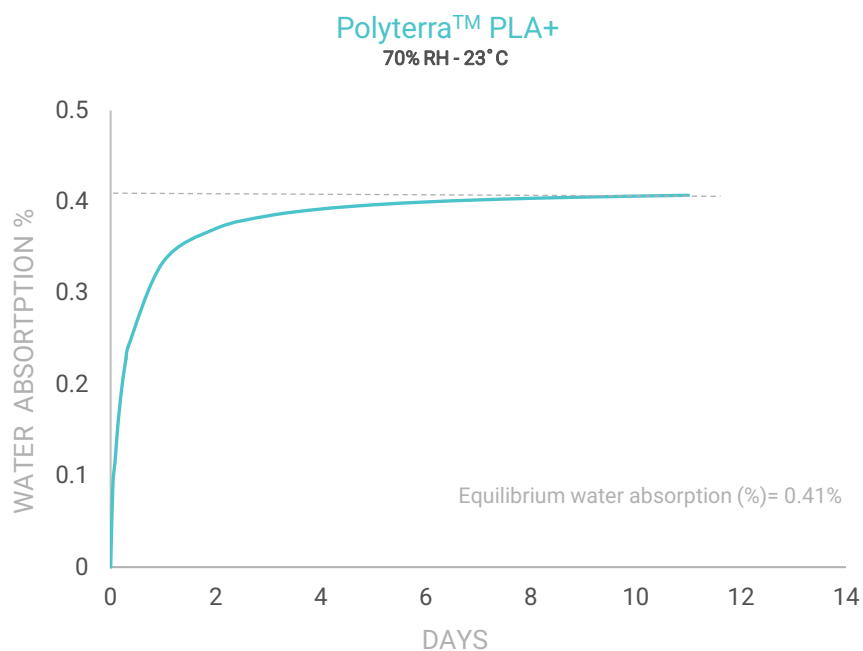
### PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.24 g/cm <sup>3</sup> at 21.5°C
Melt index	210°C, 2.16kg	8 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

### CHEMICAL RESISTANCE DATA

Property	Testing Method
Effect of weak acids	Not resistant
Effect of strong acids	Not resistant
Effect of weak alkalis	Not resistant
Effect of strong alkalis	Not resistant
Effect of organic solvent	No data available
Effect of oils and grease	No data available

### MOISTURE ABSORPTION CURVE

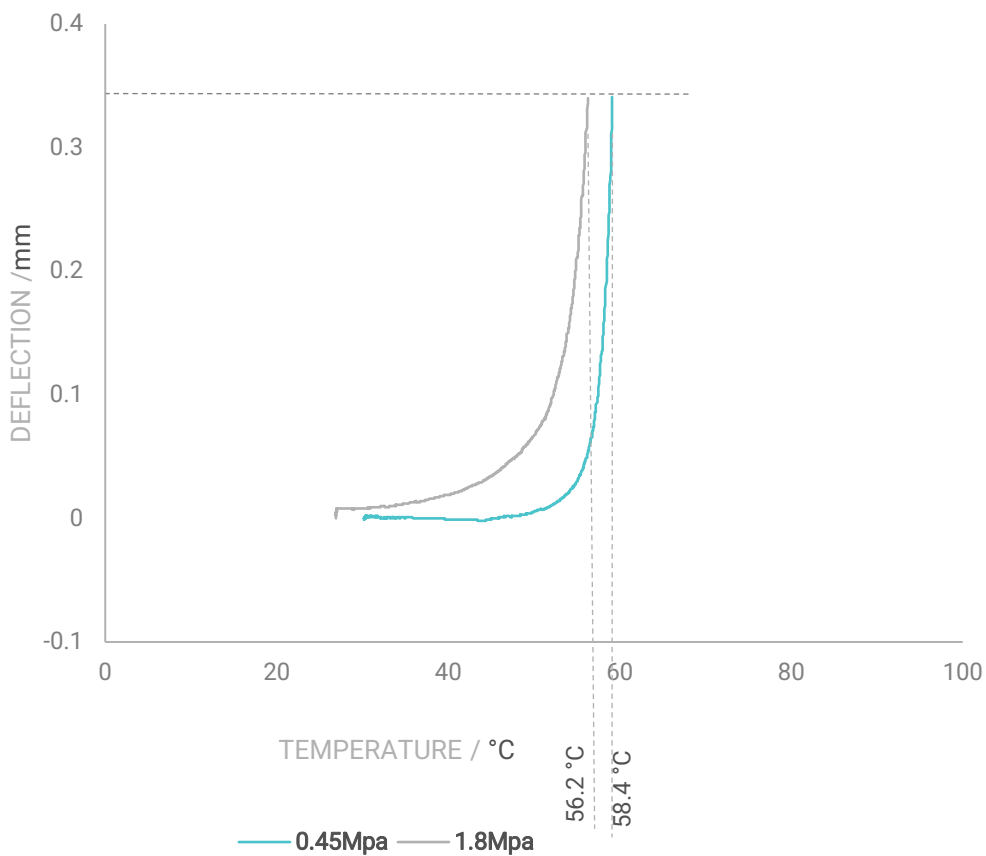


## THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	59 °C
Melting temperature	DSC, 10°C/min	161 °C
Crystallization temperature	DSC, 10°C/min	N/A
Decomposition temperature	TGA, 20°C/min	N/A
Vicat softening temperature	ISO 306, GB/T 1633	62 °C
Heat deflection temperature	ISO 75 1.8MPa	56.2 °C
Heat deflection temperature	ISO 75 0.45MPa	58.4 °C
Thermal conductivity	N/A	N/A
Heat shrinkage rate	N/A	N/A

### 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	2245.9 ± 90.7 MPa
Young's modulus (Z)		1781.2 ± 53.2 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	31.1 ± 0.8 MPa
Tensile strength (Z)		16.7 ± 0.4 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	13.8 ± 2.9 %
Elongation at break (Z)		1.1 ± 0.1 MPa
Bending modulus (X-Y)	ISO 178, GB/T 9341	2441.9 ± 77.5 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	58.7 ± 1.0 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 179, GB/T 1043	5.9 ± 0.5 kJ/m <sup>2</sup>
Charpy impact strength (Z)		N/A

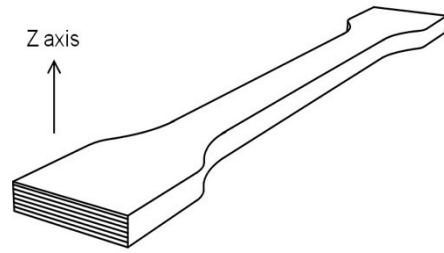
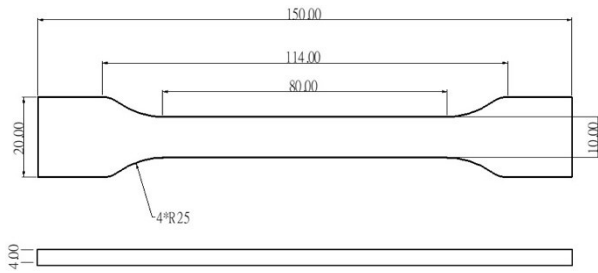
## RECOMMENDED PRINTING CONDITIONS

\* Based on 0.4 mm nozzle and Simplify 3D v.4.0. Printing conditions may vary with different nozzle diameters

Parameter	
Nozzle temperature	190 – 220 (°C)
Build surface material	BuildTak®, Glass, Blue Tape
Build surface treatment	Glue, Magigoo
Build plate temperature	30 - 60 (°C)
Cooling fan	ON
Printing speed	30 - 70 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	1 - 3 (mm)
Retraction speed	30 - 60 (mm/s)
Environmental temperature	Room temperature – 45 (°C)
Threshold overhang angle	60 (°)
Recommended support material	Self-support

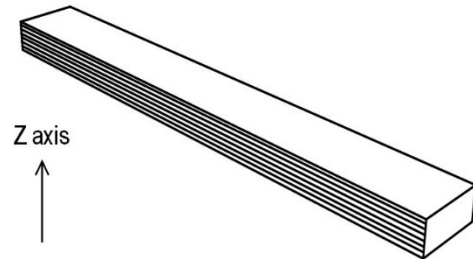
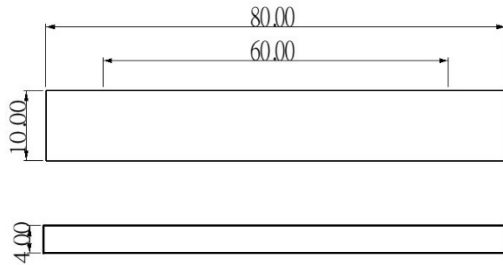
## TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



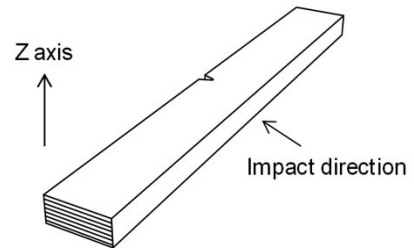
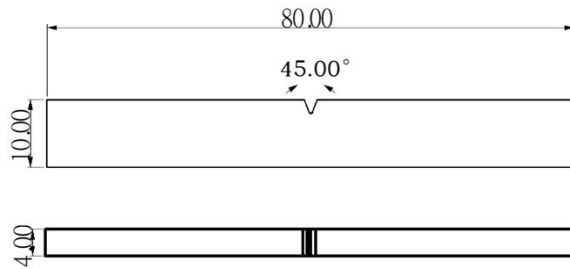
## FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



## IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



## HOW TO MAKE SPECIMENS

\*All specimens were conditioned at room temperature for 24h prior to testing

Printing temperature	210 °C
Bed temperature	25 °C
Shell	2
Top & bottom layer	4
Infill	100%
Environmental temperature	25 °C
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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