polymaker

Innovators in 3D printing

Techanical Data Sheet

PolyLite™ PLA-CF

www.polymaker.com

V5.1

PolyLite™ PLA-CF

PolyLite™ PLA-CF is a high-quality PLA reinforced with carbon fiber designed for functional applications and smooth and matte surface finish. ™

PHISICAL 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	9.24 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

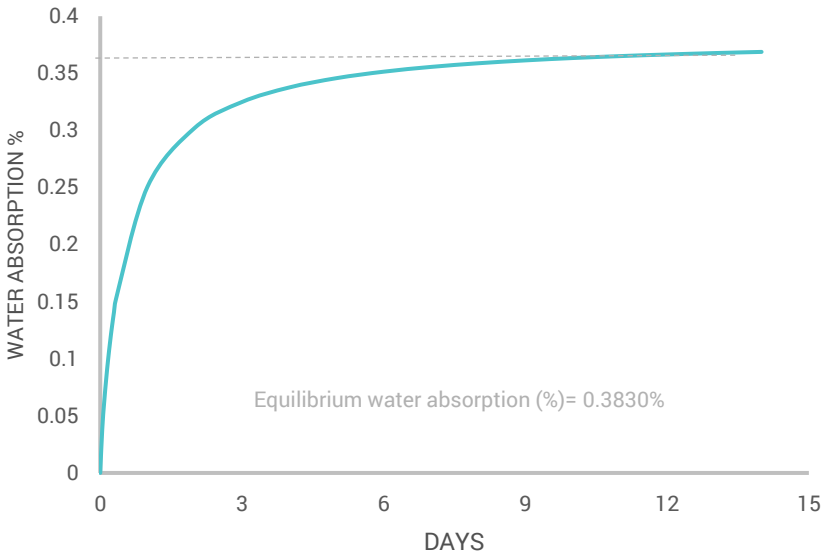
CHEMICAL RESISTANCE DATA

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

PolyLite™ PLA-CF

70% RH - 23°C



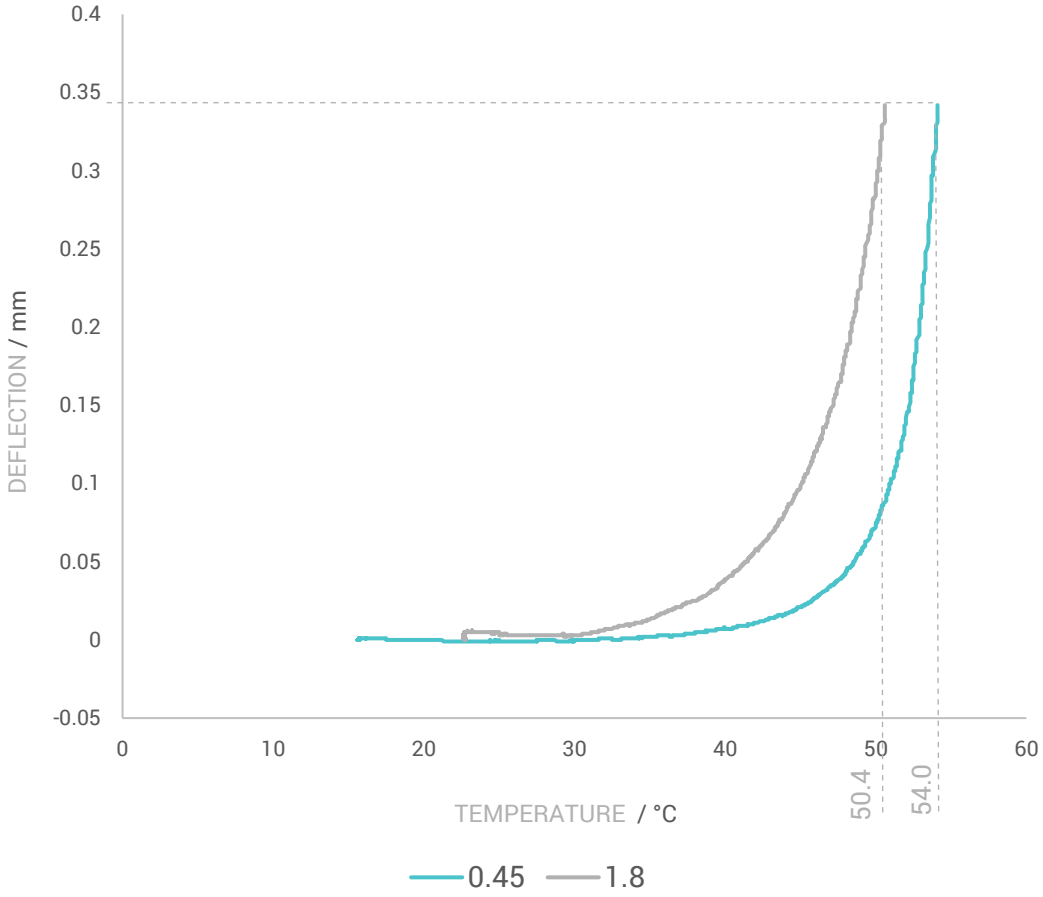
THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	61.8 °C
Melting temperature	DSC, 10°C/min	162.4 °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	64.1 °C
Heat deflection temperature	ISO 75 1.8MPa	54.0
Heat deflection temperature	ISO 75 0.45MPa	50.4
Heat shrinkage rate	N/A	N/A

HDT CURVE

PolyLite™ PLA-CF

0.45 Mpa - 1.8 Mpa



MECHANICAL PROPERTIES

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2945 ± 100 MPa
Young's modulus (Z)		2143 ± 91
Tensile strength (X-Y)	ISO 527, GB/T 1040	28.28 ± 0.7 MPa
Tensile strength (Z)		12.54 ± 0.7
Elongation at break (X-Y)	ISO 527, GB/T 1040	4.2 ± 0.12 %
Elongation at break (Z)		0.75 ± 0.08
Bending modulus (X-Y)	ISO 178, GB/T 9341	3215 ± 182 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	54.2 ± 1.4 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 179, GB/T 1043	4.82 ± 0.14 kJ/m^2
Charpy impact strength (Z)		N/A

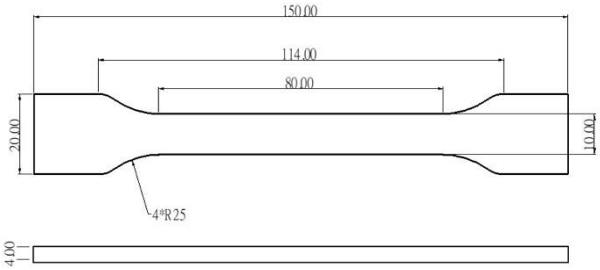
RECOMMENDED PRINTING CONDITIONS

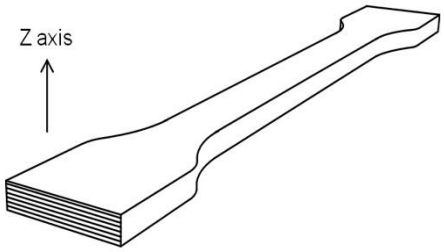
* Based on 0.4 mm nozzle and Simplify 3D v.4.0. Printing conditions may vary with different nozzle diameters

Parameter	
Nozzle temperature	190 – 220 (℃)
Build surface material	BuildTak®, Glass, Blue Tape
Build surface treatment	Glue
Build plate temperature	30 - 60 (˚C)
Cooling fan	ON
Printing speed	30-70 (mm/s)
Raft separation distance	0.2 (mm)
Retraction distance	3 (mm)
Retraction speed	40 (mm/s)
Environmental temperature	Room temperature - 45 (˚C)
Threshold overhang angle	45 (˚)
Recommended support material	PolySupport™ and PolyDissolve™ S1

TENSILE TESTING SPECIMEN

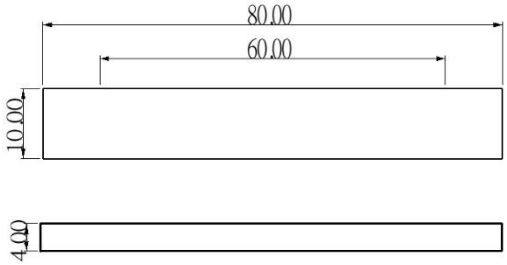
ISO 527, GB/T 1040

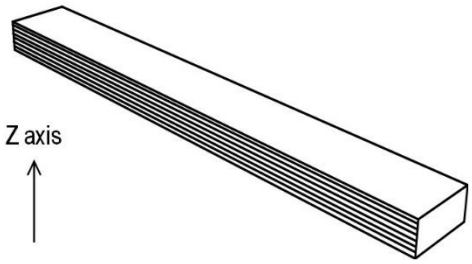




FLEXURAL TESTING SPECIMEN

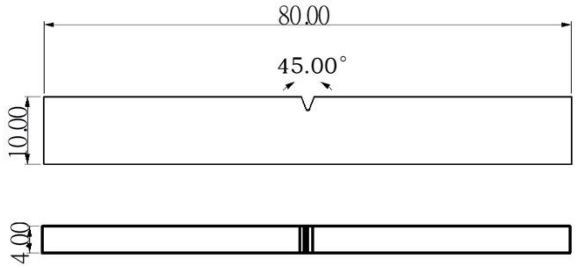
ISO 178, GB/T 9341

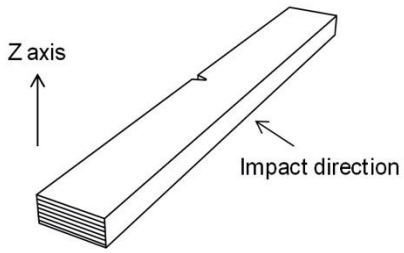




IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043





HOW TO MAKE SPECIMENS

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

Printing temperature	195 °C
Bed temperature	60 °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.

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.