

TECHNICAL DATA SHEET



V6.0



PolySonic™ PLA

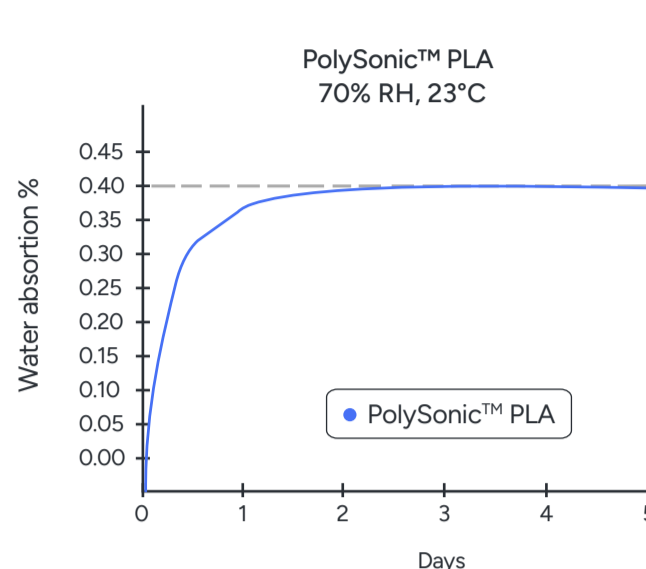
PolySonic™ PLA is a revolutionary high-speed 3D printing filament, the ultimate game-changer in additive manufacturing. With its lightning-fast extrusion rate, cutting-edge precision, and exceptional layer adhesion you can ramp up the speed of your 3D printer and witness new levels of productivity. Accelerate your workflow without compromising on strength or quality.

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PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.23 g/cm ³ at 21.5°C
Melt index	210°C, 2.16kg	15.4 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

MOISTURE ABSORPTION CURVE



THERMAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Glass transition temp.	DSC, 10°C/min	59 °C
Melting temp.	DSC, 10°C/min	164 °C
Crystallization temp.	DSC, 10°C/min	96 °C
Decomposition temp.	TGA, 20°C/min	370 °C
Vicat softening temp.	ISO 306, GB/T 1633	61 °C
Heat deflection temp.	ISO 75 1.8MPa	52 °C
Heat deflection temp.	ISO 75 0.45MPa	53 °C

MECHANICAL PROPERTIES - Classic Speed

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	2878.3 ± 74.3 MPa
Young's modulus (Z)		2689.8 ± 92.0 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	46.0 ± 0.5 MPa
Tensile strength (Z)		37.3 ± 0.7 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	21.5 ± 5.1 %
Elongation at break (Z)		4.2 ± 2.0 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2868.2 ± 78.4 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	76.5 ± 0.9 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y) notched	ISO 179, GB/T 1043	6.1 ± 0.6 kJ/m ²
Charpy impact strength (Z) notched		N/A

* Based on 0.4 mm nozzle and 0.2mm layer thickness. Classic printing speed = 46.7mm/s, printing temperature = 210 °C

MECHANICAL PROPERTIES - High Speed

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	2649.7 ± 78.3 MPa
Young's modulus (Z)		2433.4 ± 79.4 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	43.9 ± 0.4 MPa
Tensile strength (Z)		32.4 ± 0.4 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	15.1 ± 3.9 %
Elongation at break (Z)		3.3 ± 0.5 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2797.9 ± 40.7 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	71.4 ± 0.6 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y) notched	ISO 179, GB/T 1043	5.0 ± 0.5 kJ/m ²
Charpy impact strength (Z) notched		N/A

* Based on 0.4 mm nozzle and 0.2mm layer thickness. High printing speed = 300mm/s, printing temperature = 230 °C

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	Classic: 190-210 °C High-speed: 210-230 °C
Build plate temperature	30 - 60 (°C)
Build surface treatment	PC and Texture PEI (Glue when needed)
Cooling fan	ON
Closure chamber	No Needed
Recommended support material	PolySupport™ and PolyDissolve™ S1

Printing speed	Classic: 50-100mm/s High-speed: 100-300mm/s
Drying temp. and time	55°C for 6h
Retraction distance	1 - 3 (mm)
Retraction speed	20 - 40 (mm/s)
Annealing setting	-

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



PolyBox™ or PolyDryer™ Box

Recommended storage for excellent printing quality

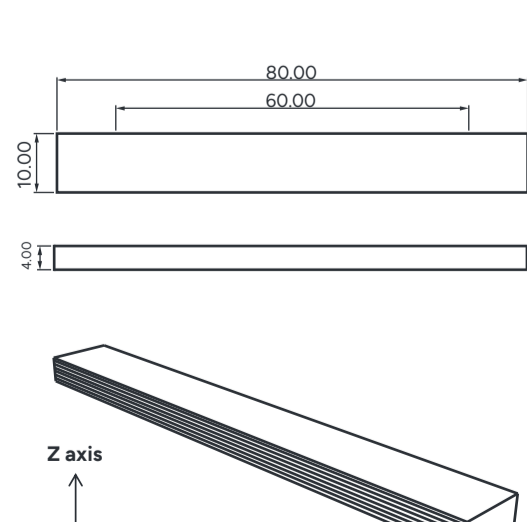
HOW TO MAKE SPECIMENS

Printing temperature	210 °C/230 °C
Bed temperature	50 °C
Top & bottom layer	3
Environmental temperature	Ambient

Infill	100%
Shell	2
Cooling fan	ON

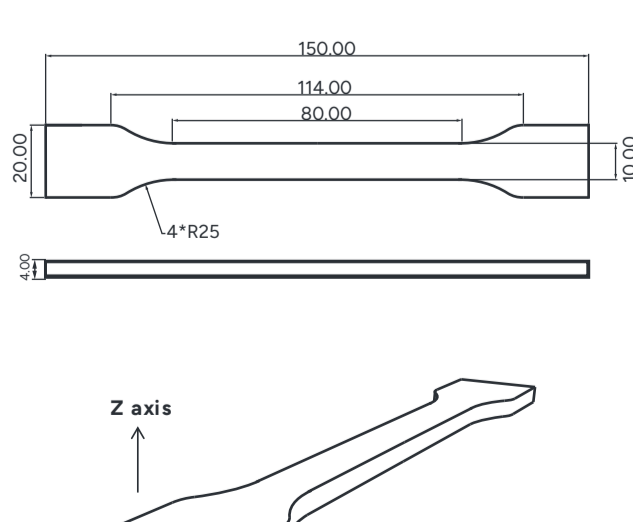
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



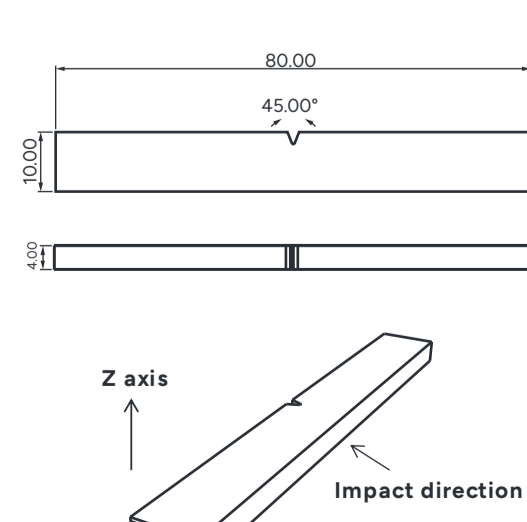
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



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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