polymaker

Innovators in 3D printing

Technical Data Sheet

PolySmooth™

www.polymaker.com

V5.4

PolySmooth™

PolySmooth™ is a unique, easy-to-print filament designed for hands-free post processing. The surface can be smoothed with alcohol to achieve layer free models using the Polysher™.

PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.10 g/cm^3 at 23°C
Melt index	210°C, 2.16kg	6.7 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

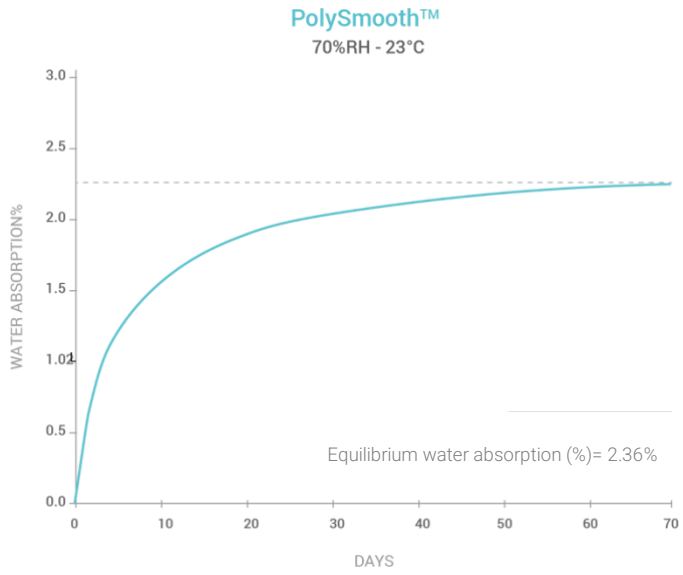
CHEMICAL RESISTANCE DATA

Property	Typical Value
Effect of weak acids	Not Available
Effect of strong acids	Not Available
Effect of weak alkalis	Not Available
Effect of strong alkalis	Not Available
Effect of oils and grease	Not Available

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

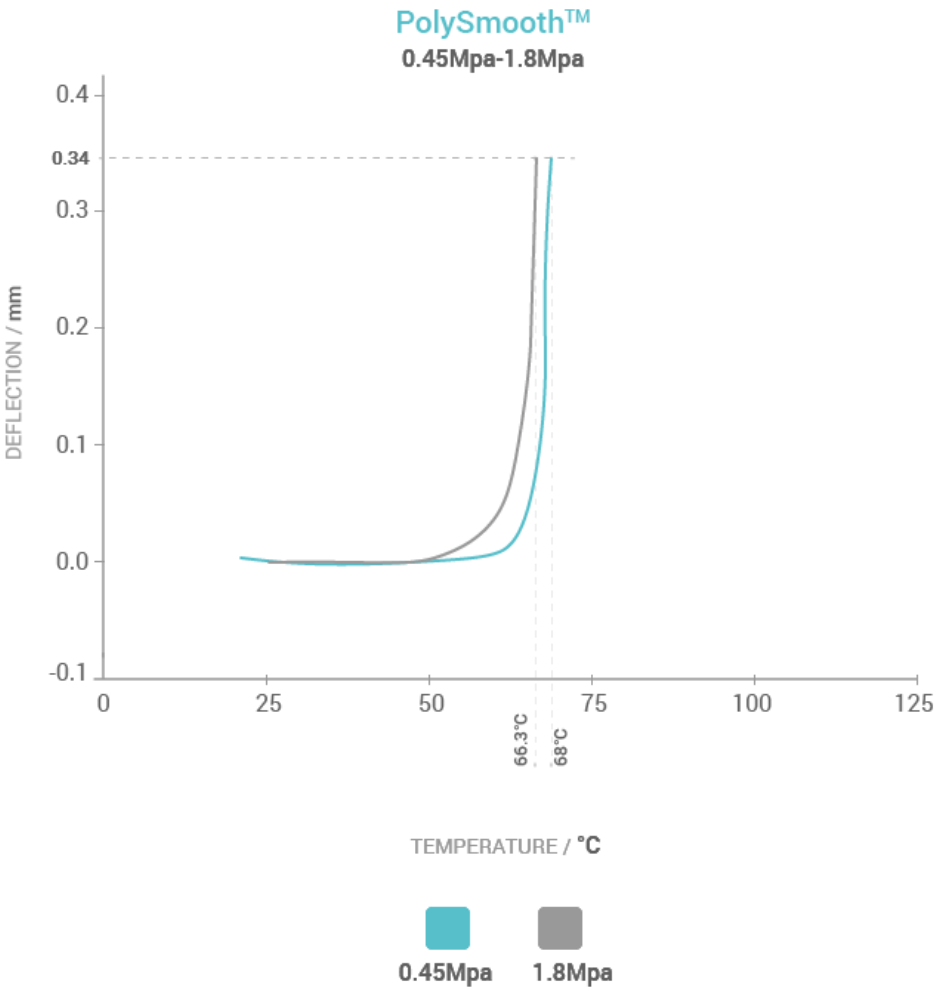
MOISTURE ABSORPTION CURVE



THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition temperature	DSC, 10°C/min	70 °C
Melting temperature	DSC, 10°C/min	N/A
Crystallization temperature	DSC, 10°C/min	N/A
Decomposition temperature	TGA, 20°C/min	260 °C
Vicat softening temperature	ISO 306, GB/T 1633	70 °C
Heat deflection temperature	ISO 75 1.8MPa	66 °C
Heat deflection temperature	ISO 75 0.45MPa	68 °C

HDT CURVE



MECHANICAL PROPERTIES

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2199 ± 43 MPa
Young's modulus (Z)		2010 ± 69 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	51.8 ± 0.7 MPa
Tensile strength (Z)		38.9 ± 0.8 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	14.5 ± 2.9 %
Elongation at break (Z)		2.8 ± 0.3 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2198 ± 57 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	75.9 ± 0.8 MPa
Bending strength (Z)		N/A
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	3.1 ± 0.8 kJ/m^2
Notched Charpy impact strength (Z)		N/A

RECOMMENDED PRINTING CONDITIONS

Parameter	
Nozzle temperature	190 – 220 (℃)
Build surface treatment	PC and Texture PEI (Glue when needed)
Build plate temperature	25 - 70 (˚C)
Cooling fan	ON
Printing speed	50 - 200 (mm/s)
Retraction distance	1 - 3 (mm)
Retraction speed	20 - 40 (mm/s)
Closure Chamber	No Needed
Recommended support material	PolyDissolve™ S1
Drying setting	50˚C for 12h
Annealing setting	-

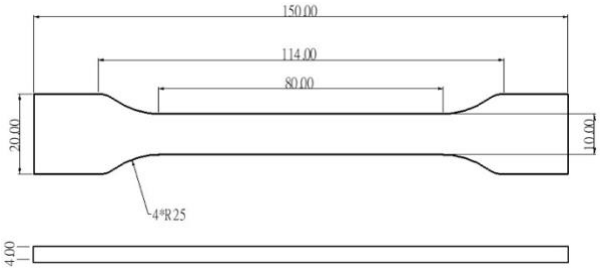
* Based on 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters

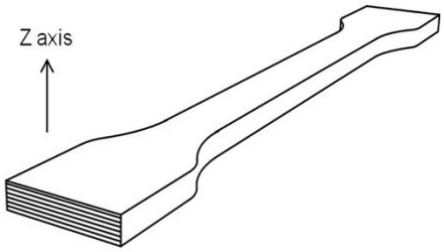
Note:

- It is highly recommended to use the PolyBox™ when printing with PolySmooth™ and to store it in the resealable bag.

TENSILE TESTING SPECIMEN

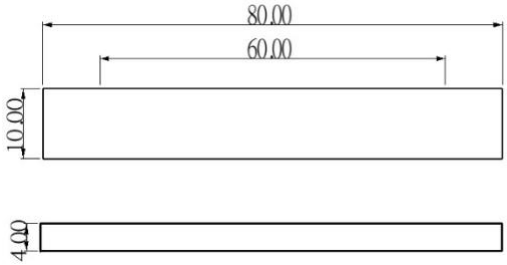
ISO 527, GB/T 1040

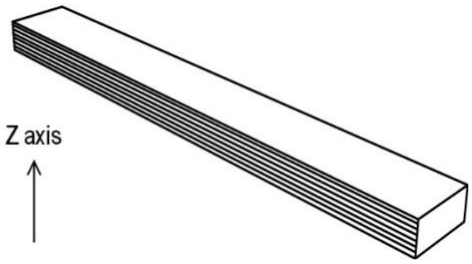




FLEXURAL TESTING SPECIMEN

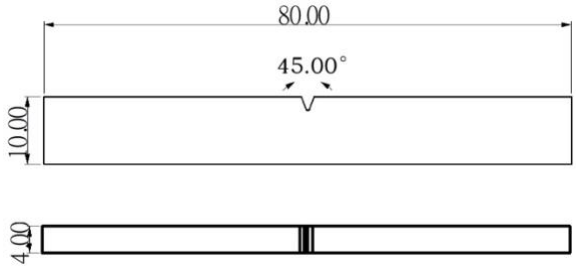
ISO 178, GB/T 9341

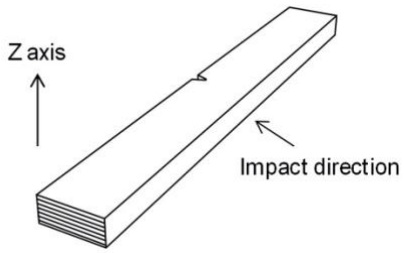




IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043





HOW TO MAKE SPECIMENS

Printing temperature	220 °C
Bed temperature	60 °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.

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.