

# TECHNICAL DATA SHEET



V5.5



## Polymaker™ Polycast

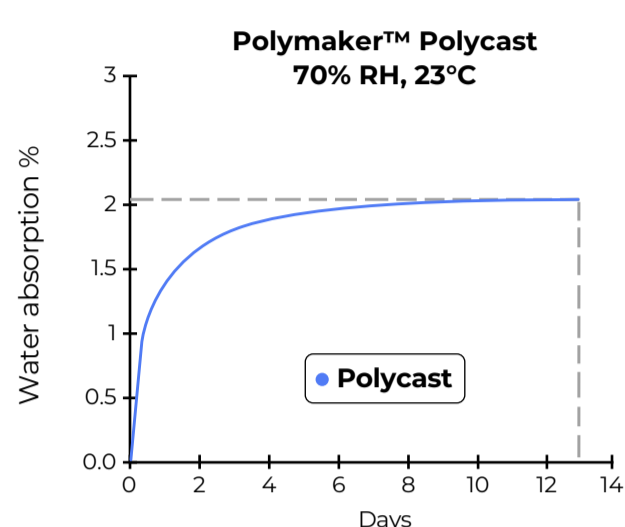
PolyCast™ is a filament designed to produce investment patterns for casting applications. 3D printing significantly cuts down both the cost and lead time by eliminating the tooling process.

[WWW.POLYMAKER.COM](http://WWW.POLYMAKER.COM)

### PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.1 g/cm <sup>3</sup> at 21.5°C
Melt index	210°C, 2.16kg	6.6-6.7 g/10min
Light transmission	N/A	N/A
Flame retardancy	N/A	N/A

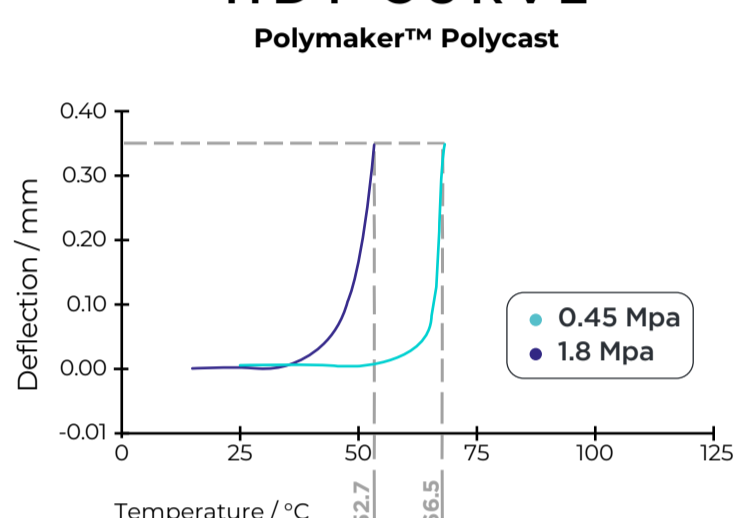
### MOISTURE ABSORPTION CURVE



### THERMAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Glass transition temp.	DSC, 10°C/min	70°C
Melting temp.	DSC, 10°C/min	N/A
Crystallization temp.	DSC, 10°C/min	N/A
Decomposition temp.	TGA, 20°C/min	260°C
Vicat softening temp.	ISO 306, GB/T 1633	67°C
Heat deflection temp. (1.8MPa)	ISO 75, 1.8MPa	53°C
Heat deflection temp. (0.45MPa)	ISO 75, 0.45MPa	67°C

### HDT CURVE



### MECHANICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	2215 ± 42 MPa
Young's modulus (Z)		2111 ± 87 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	53.2 ± 1.1 MPa
Tensile strength (Z)		26.3 ± 2.1 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	5.7 ± 0.5%
Elongation at break (Z)		1.3 ± 0.1%
Bending modulus (X-Y)	ISO 178, GB/T 9341	2233 ± 106 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	78.0 ± 2.3 MPa
Bending strength (Z)		N/A
Notched Charpy impact strength (X-Y)	ISO 179, GB/T 1043	2.9 ± 0.3 kJ/m <sup>2</sup>
Notched Charpy impact strength (Z)	ISO 179, GB/T 1043	2.9 ± 0.3 kJ/m <sup>2</sup>

### RECOMMENDED PRINTING CONDITIONS

Nozzle temperature	190-220°C
Build plate temperature	25-70°C
Build surface treatment	PC and Textured PEI
Cooling fan	ON
Closure chamber	Not needed

Printing Speed	50-200mm/s
Drying temp. and time	50°C/12H
Retraction distance	1-3 (mm)
Retraction Speed	20-40 (mm/s)

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



#### PolyDissolve™ S1

Recommended support material  
Store in the resealable bag



#### PolyBox™ or PolyDryer™ Box

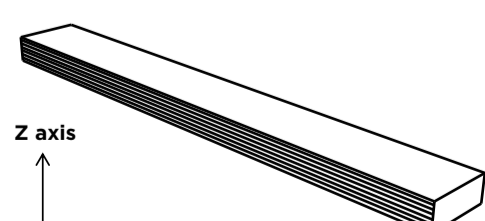
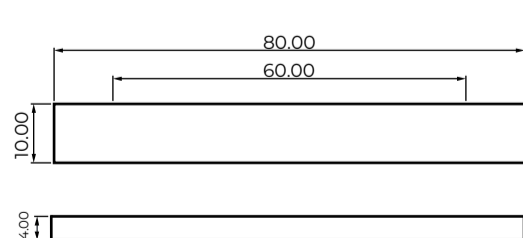
Highly Recommended  
storage for excellent print-

### HOW TO MAKE SPECIMENS

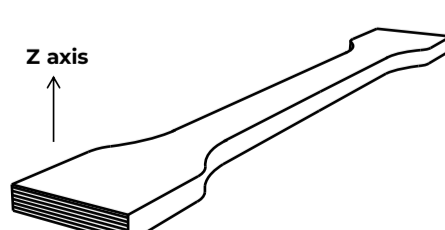
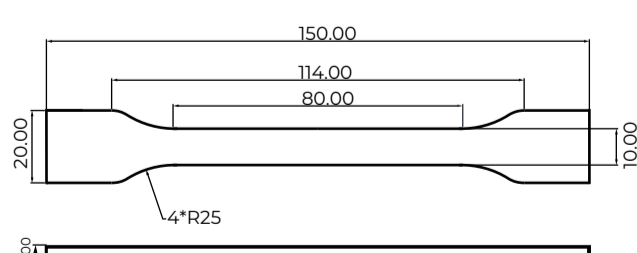
Printing temperature	220°C
Bed temperature	60°C
Top & bottom layer	3
Environmental Temperature	Ambient

Infill	100%
Shell	2
Cooling fan	ON

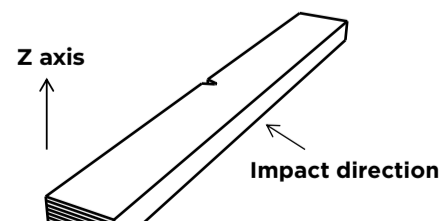
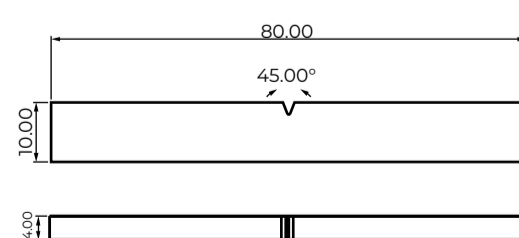
#### FLEXURAL TESTING SPECIMEN ISO 178, GB/T 9341



#### TENSILE TESTING SPECIMEN ISO 527, GB/T 1040



#### IMPACT TESTING SPECIMEN ISO 179, GB/T 1043



\*Based on testing with Polymaker™ Polycast Natural (SKU: PJ03002)

### 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.