polymaker

Innovators in 3D printing

Technical Data Sheet

PolyMax™ PC-FR

www.polymaker.com

V5.0

PolyMax™ PC-FR

PolyMax™ PC-FR, creation from Covestro's Makrolon® family, could achieve V0 performance in the UL94 flame retardancy test and displays excellent toughness, strength and heat resistance. This filament opens new applications in the automotive, railway and aerospace industries.

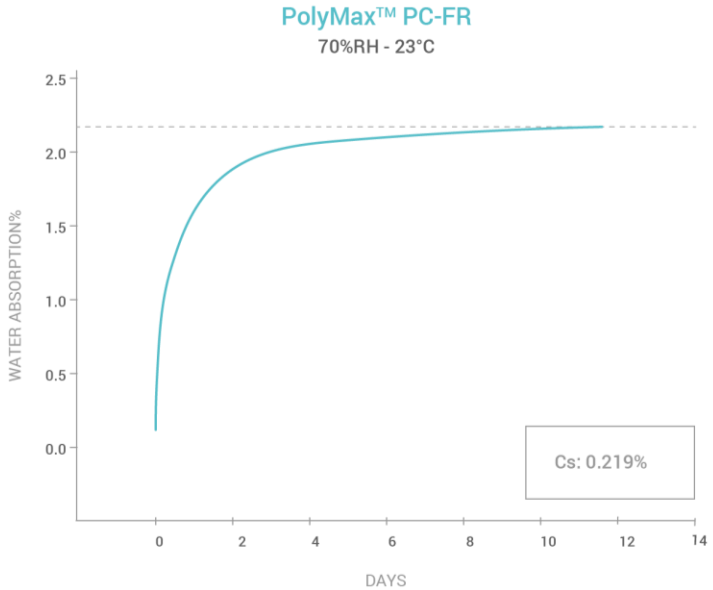
PHYSICAL PROPERTIES

Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.2 g/cm^3 at 21°C
Melt Index	260°C, 5 kg	12-17 g/10min
Light Transmission	N/A	N/A
Flame retardancy V2	UL94	V0

CHEMICAL RESISTANT DATA

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

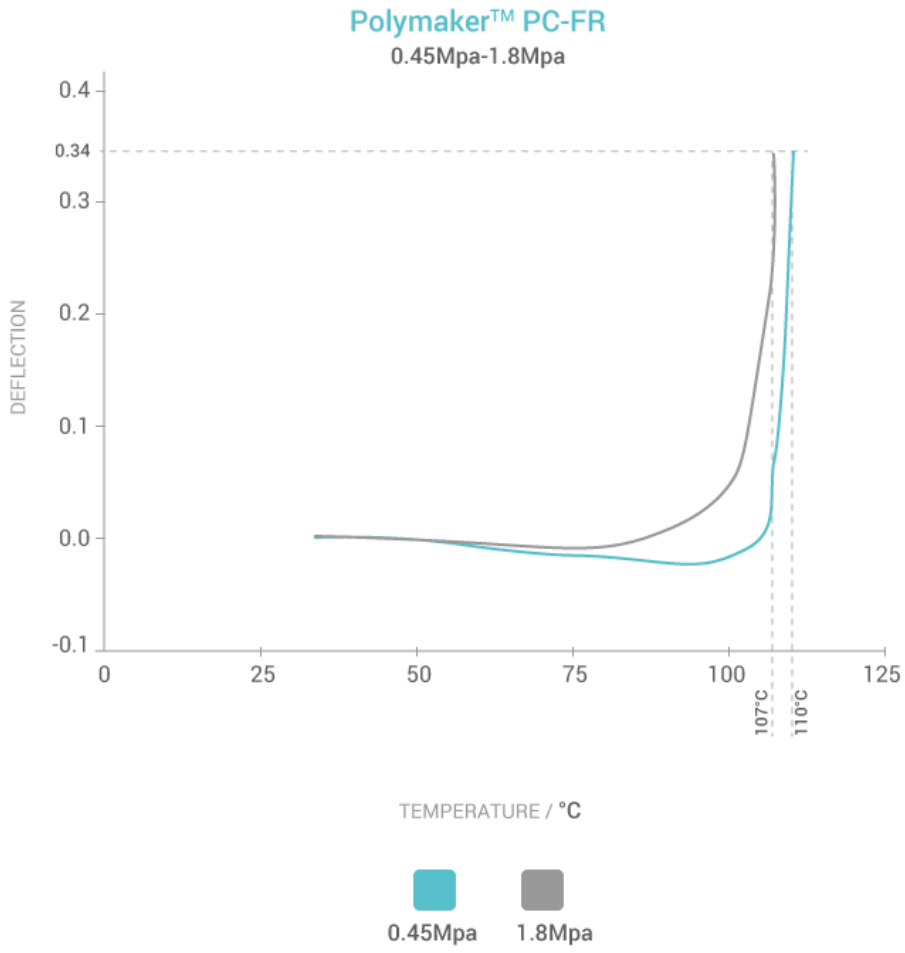
MOISTURE ABSORPTION CURVE



THERMAL PROPERTIES

Property	Testing Method	Typical Value
Glass transition	DSC, 10°C/min	115 °C
Melting temperature	DSC, 10°C/min	N/A
Crystallization temperature	DSC, 10°C/min	N/A
Decomposition temperature	TGA, 20°C/min	N/A
Vicat softening temperature	ISO 306 GB/T 1633	116 °C
Heat deflection temperature	ISO 75 1.8MPa	107 °C
Heat deflection temperature	ISO 75 0.45MPa	110 °C
Thermal conductivity	N/A	N/A
Heat shrinkage rate	N/A	N/A

HDT CURVE



MECHANICAL PROPERTIES

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2634 ± 182 MPa
Young's modulus (Z)		2743 ± 72 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	67 ± 4.5 MPa
Tensile strength (Z)		46 ± 4.8 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	3.49 ± 0.7 %
Elongation at break (Z)		2.2 ± 0.3 %
Bending modulus (X-Y)	ISO 178, GB/T 9341	2518 ± 53 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	96.6 ± 1.3 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 179, GB/T 9343	11.7 ± 1.6 kj/m^2
Charpy impact strength (Z)		N/A
Low temperature impact strength (X-Y)	ISO 179-1/1eA:2010, -30°C	7.5 ± 1.6 kj/m^2

HOW TO MAKE SPECIMENS

Printing temperature	255 °C
Bed temperature	100 °C
Shell	2
Top & bottom layer	4
Infill	100%
Environmental temperature	70 – 80 (recommended) (˚C)
Cooling fan	OFF

Note:

- When printing with PolyMax™ PC-FR it is recommended to use an enclosure. For large part it is recommended to use a heated chamber.
- It is recommended to anneal the printed part right after the printing process to release the residual internal stress. Annealing settings: 100˚C for 2h
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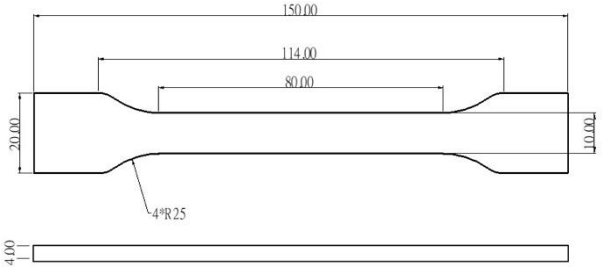
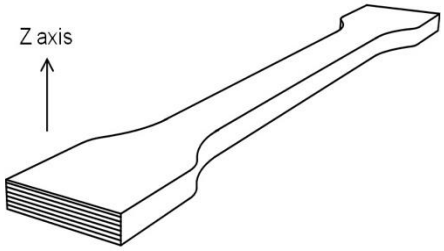
TENSILE TESTING SPECIMEN

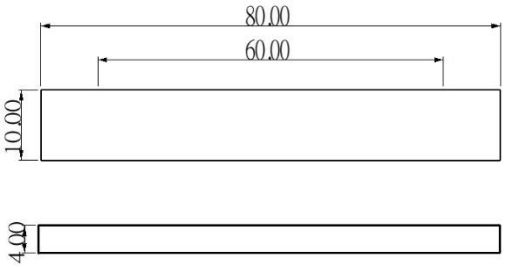
ASTM D638 (ISO 527, GB/T 1040)

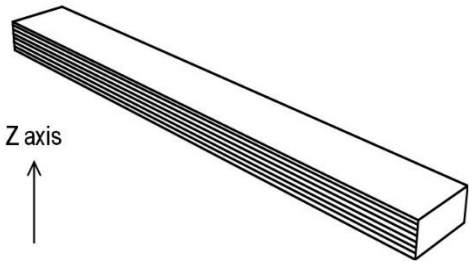




FLEXURAL TESTING SPECIMEN

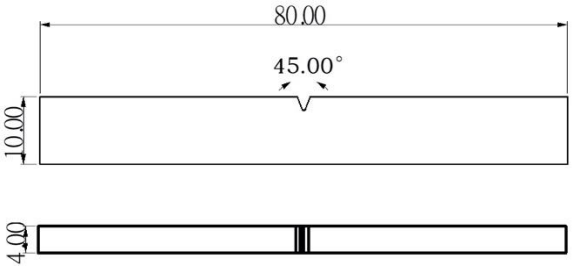
ASTM D638 (ISO 527, GB/T 1040)

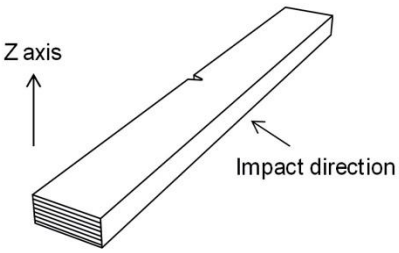




IMPACT TESTING SPECIMEN

ASTM D638 (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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