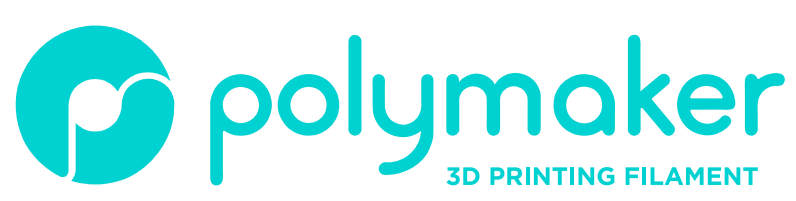


TECHNICAL DATA SHEET



V5.5



PolyMax™ PC-FR

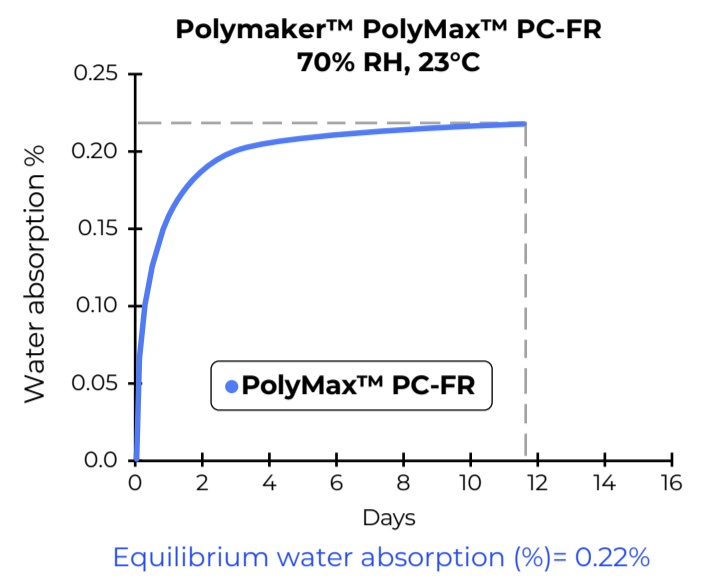
PolyMax™ PC-FR, creation from Covestro's Makrolon® family, could achieve V0 performance in the UL94 flame retardancy test and displays excellent toughness, strength and heat resistance. This filament opens new applications in the automotive, railway and aerospace industries.

WWW.POLYMAKER.COM

PHYSICAL PROPERTIES

| PROPERTY | TESTING METHOD | TYPICAL VALUE |
|--------------------|--------------------|-------------------------------|
| Density | ISO1183, GB/T 1033 | 1.2 g/cm ³ at 23°C |
| Melt index | 260°C, 5kg | 12-17 g/10min |
| Light transmission | N/A | N/A |
| Flame retardancy | UL94 | V0 |

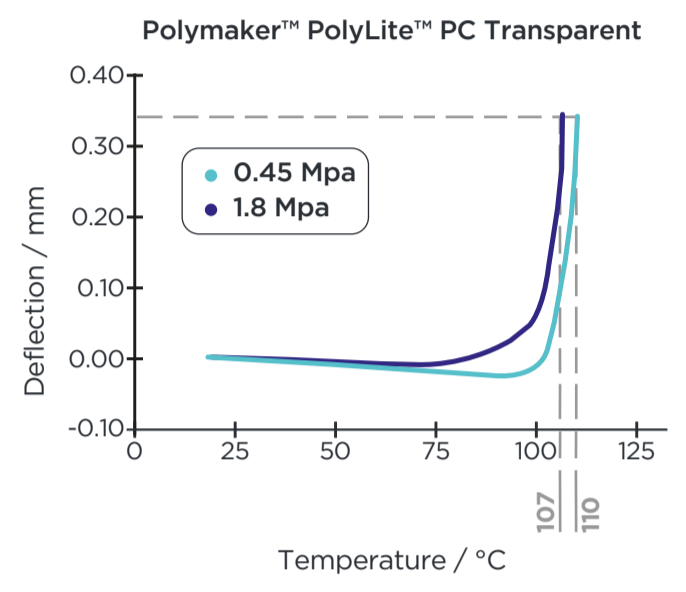
MOISTURE ABSORPTION CURVE



THERMAL PROPERTIES

| PROPERTY | TESTING METHOD | TYPICAL VALUE |
|---------------------------------|--------------------|---------------|
| Glass transition temp. | DSC, 10°C/min | 115°C |
| Melting temp. | DSC, 10°C/min | N/A |
| Crystallization temp. | DSC, 10°C/min | N/A |
| Decomposition temp. | TGA, 20°C/min | N/A |
| Vicat softening temp. | ISO 306, GB/T 1633 | 116°C |
| Heat deflection temp. (1.8MPa) | ISO 75 1.8MPa | 107°C |
| Heat deflection temp. (0.45MPa) | ISO 75 0.45MPa | 110°C |

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 527, GB/T 1040 | 2518 ± 53 MPa |
| Bending modulus (Z) | | N/A |
| Bending strength (X-Y) | ISO 527, GB/T 1040 | 96.6 ± 1.3 MPa |
| Bending strength (Z) | | N/A |
| Notched charpy impact strength (X-Y) | ISO 179, GB/T 1043 | 11.7 ± 1.6 kJ/m ² |
| Notched charpy impact strength (Z) | | N/A |
| Low temp. impact strength (X-Y) | ISO 179-1 / 1eA:2010, -30°C | 7.5 ± 1.6 kJ/m ² |

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 | 250-270°C |
| Build plate temperature | 90-105°C |
| Build surface treatment | PC and Textured PEI |
| Cooling fan | OFF |
| Closure chamber | Needed (70°C-100°C) |

| | |
|-----------------------|--------------|
| Printing speed | 50-200mm/s |
| Drying temp. and time | 75°C/6H |
| Retraction distance | 1-3 (mm) |
| Retraction speed | 20-40 (mm/s) |
| Annealing setting | 90°C/2H |

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

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: 90 °C for 2h



PolyBox™ or PolyDryer™ Box

NOTE

It is highly recommended to use the PolyBox™ or PolyDryer™ Box when printing or storing.

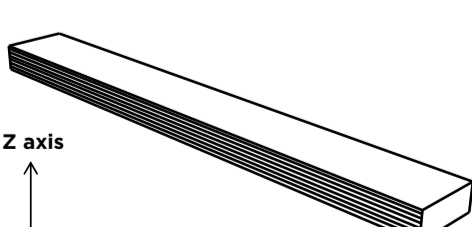
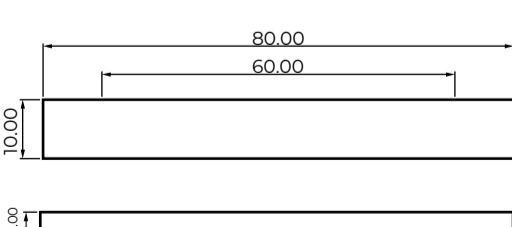
HOW TO MAKE SPECIMENS

| | |
|---------------------------|-------|
| Printing temperature | 260°C |
| Bed temperature | 100°C |
| Top & bottom layer | 3 |
| Environmental Temperature | 90°C |

| | |
|-------------|------|
| Infill | 100% |
| Shell | 2 |
| Cooling fan | OFF |

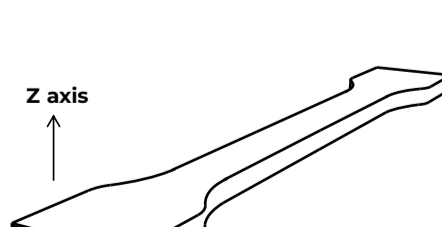
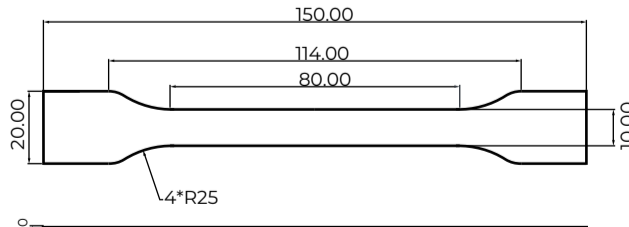
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



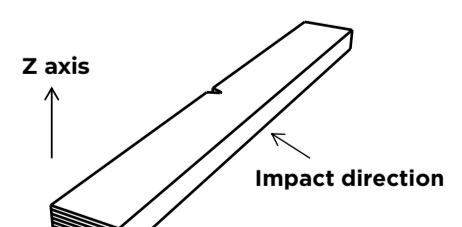
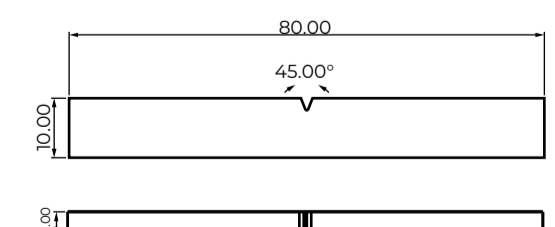
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



*Based on testing with Polymaker™ PolyMax™ PC-FR (SKU: PC03001)

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.