

Technical Data Sheet

PolyLite™ PC

www.polymaker.com

V5.3



PolyLite™ PC is produced using a polycarbonate resin specifically engineered for 3D printing. It delivers good stiffness and heat resistance with light diffusing properties.

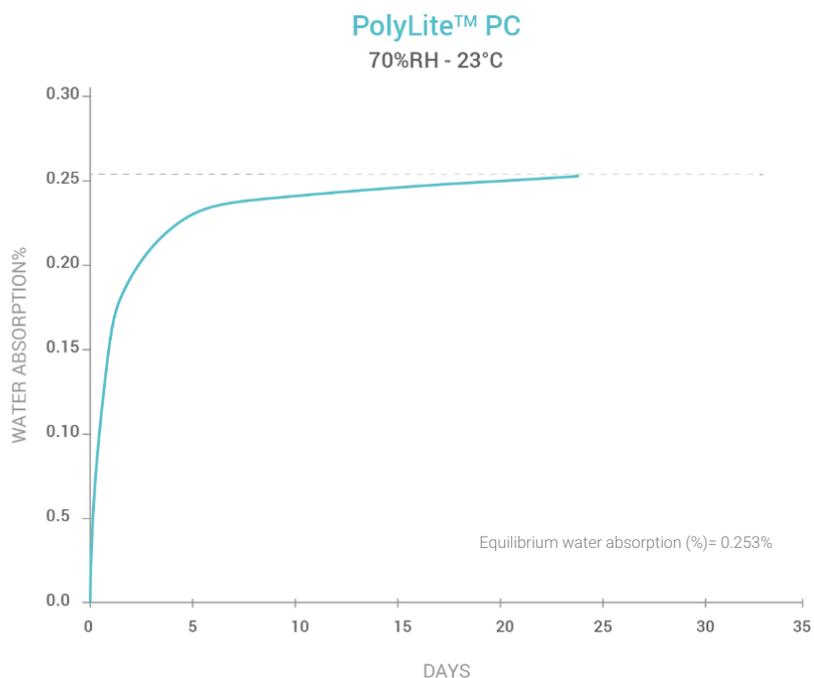
PHYSICAL PROPERTIES

| Property | Testing Method | Typical Value |
|--------------------|-------------------|--------------------------------|
| Density | ISO1183, GB/T1033 | 1.19 g/cm ³ at 23°C |
| Melt index | 260°C, 2.16kg | 8-11 g/10min |
| Light transmission | GB/T 2410 | 89% |
| Flame retardancy | N/A | N/A |

CHEMICAL RESISTANCE 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 |

MOISTURE ABSORPTION CURVE

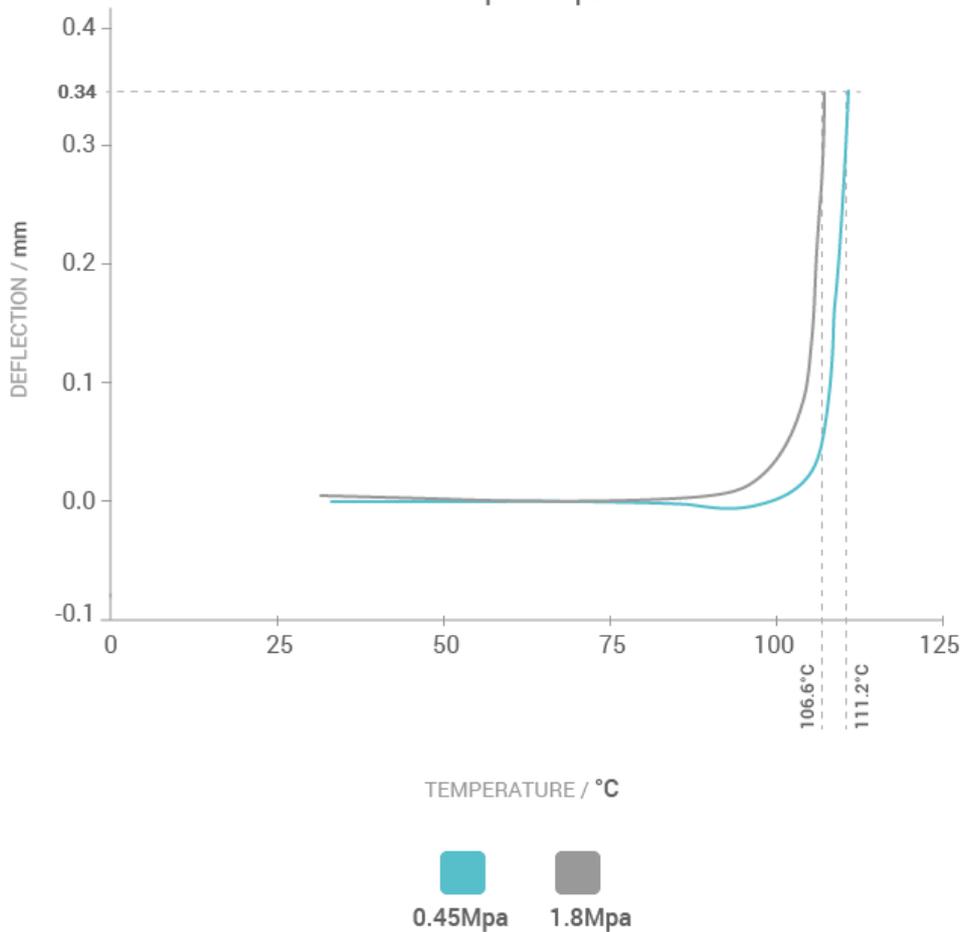


THERMAL PROPERTIES

| Property | Testing Method | Typical Value |
|------------------------------|--------------------|---------------|
| Glass transition temperature | DSC, 10°C/min | 113.4 °C |
| Melting temperature | DSC, 10°C/min | N/A |
| Crystallization temperature | DSC, 10°C/min | N/A |
| Decomposition temperature | TGA, 20°C/min | > 360°C |
| Vicat softening temperature | ISO 306, GB/T 1633 | 119.5 °C |
| Heat deflection temperature | ISO 75 1.8MPa | 106.6 °C |
| Heat deflection temperature | ISO 75 0.45MPa | 111.2 °C |
| Thermal conductivity | N/A | N/A |
| Heat shrinkage rate | N/A | N/A |

HDT CURVE

PolyLite™ PC
0.45Mpa-1.8Mpa



MECHANICAL PROPERTIES

| Property | Testing Method | Typical Value |
|------------------------------|--------------------|-----------------------------|
| Young's modulus (X-Y) | ISO 527, GB/T 1040 | 2497 ± 154 MPa |
| Young's modulus (Z) | | 2371 ± 55 MPa |
| Tensile strength (X-Y) | ISO 527, GB/T 1040 | 69.1 ± 3.0 MPa |
| Tensile strength (Z) | | 52.8 ± 1.7 MPa |
| Elongation at break (X-Y) | ISO 527, GB/T 1040 | 4.8 ± 0.9 % |
| Elongation at break (Z) | | 2.7 ± 0.1 % |
| Bending modulus (X-Y) | ISO 178, GB/T 9341 | 2640 ± 47 MPa |
| Bending modulus (Z) | | N/A |
| Bending strength (X-Y) | ISO 178, GB/T 9341 | 106.1 ± 1.6 MPa |
| Bending strength (Z) | | N/A |
| Charpy impact strength (X-Y) | ISO 179, GB/T 1043 | 4.1 ± 0.9 kJ/m ² |
| Charpy impact strength (Z) | | N/A |

* Specimens printed on Raise 3D E2 with 0.4mm nozzle.

RECOMMENDED PRINTING CONDITIONS

* Based on 0.4 mm nozzle and Simplify 3D v.4.0. Printing conditions may vary with different nozzle diameters

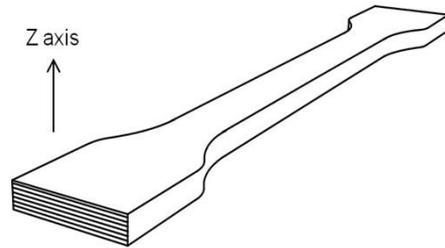
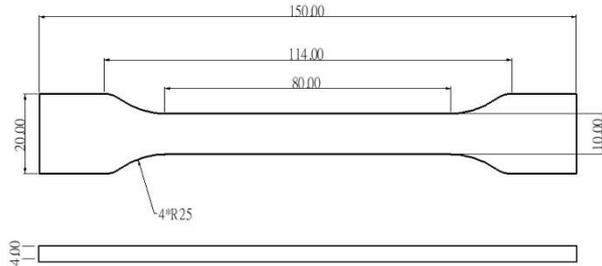
| Parameter | |
|------------------------------|--------------------------|
| Nozzle temperature | 250 – 270 (°C) |
| Build surface material | BuildTak®, Glass, PEI |
| Build surface treatment | Magigoo |
| Build plate temperature | 90 - 105 (°C) |
| Cooling fan | OFF |
| Printing speed | 30-50 (mm/s) |
| Raft separation distance | 0.2 (mm) |
| Retraction distance | 1 (mm) |
| Retraction speed | 20 (mm/s) |
| Environmental temperature | 70-80 (°C) (Recommended) |
| Threshold overhang angle | 50 (°) |
| Recommended support material | PolyDissolve™ S2 |

Note:

- When printing with PolyLite™ PC, 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

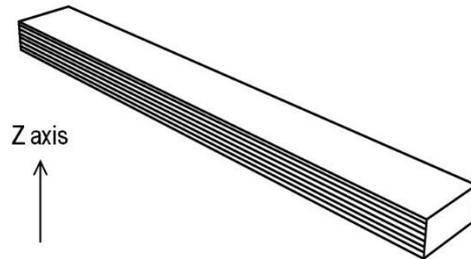
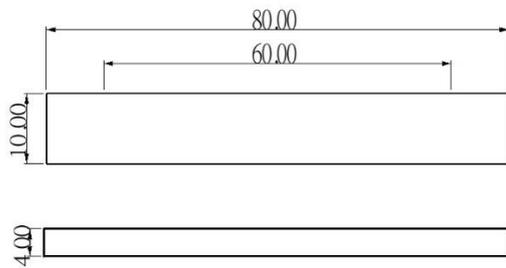
TENSILE TESTING SPECIMEN

ISO 527, GB/T 1040



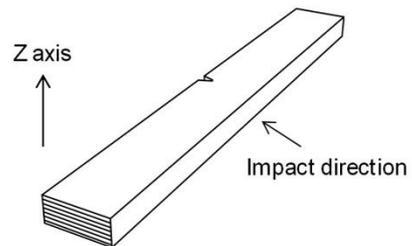
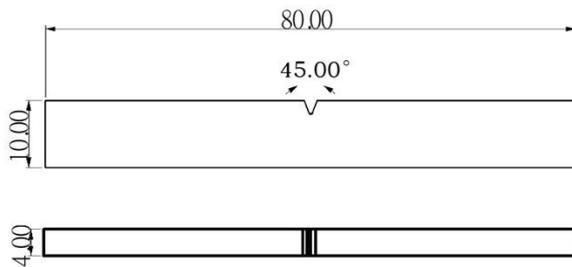
FLEXURAL TESTING SPECIMEN

ISO 178, GB/T 9341



IMPACT TESTING SPECIMEN

ISO 179, GB/T 1043



HOW TO MAKE SPECIMENS

*All specimens were conditioned at room temperature for 24h prior to testing

| | |
|---------------------------|--------|
| Printing temperature | 255 °C |
| Bed temperature | 100 °C |
| Shell | 2 |
| Top & bottom layer | 4 |
| Infill | 100% |
| Environmental temperature | 80°C |
| Cooling fan | OFF |

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.