Polymaker™ PC-PBT
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Printing with Polymaker™ PC-PBT

Polymaker™ PC-PBT

Polymaker™ PC-PBT is a PC/PBT polymer blend which offers good heat resistance and toughness at low temperature (-20°C/-30°C). Polymaker™ PC-PBT also features good chemical resistance.

Printing settings

Nozzle Temperature: 260-280 °C
Bed Temperature: 100-115 °C
Chamber Temperature: 100-110 °C
Printing Speed: 30-50 mm/s
Cooling Fan: OFF

Note: Settings are based on 0.4 mm nozzle, and may vary with different printers and nozzle diameters.

Bed surface

Polymaker™ PC-PBT can be printed on almost any surface with a thin coat of Magigoo PC. We recommend a flex plate to facilitate the removal of the model from the plate.
High temperature conditions

We recommend a full metal hot end that can maintain a stable temperature of at least 260°C. We also recommend to use a heated chamber capable of reaching at least 80°C.

Annealing Polymaker™ PC-PBT parts

We recommend annealing all models printed in Polymaker™ PC-PBT. This allows users to take full advantage of the mechanical and thermal properties.

The annealing process consists of putting the model in an oven at 90 °C for 2 hours.

Support material

PolyDissolve™ S2 is the recommended support material for Polymaker™ PC-PBT.

For more information, please visit www.polymaker.com
The profile creation process (PCP) allows users to rapidly develop a printing profile for any given material/printer. During this process is important to consider all of these factors to build a successful profile.

Polymaker developed the PCP to assist customers in creating their own tailored print profiles; taking into account the material, printer, environment as well as the models geometry and purpose. Additionally, the PCP allows individuals to develop their own knowledge and troubleshooting skills.

The PCP is available on www.polymaker.com

The PCP is divided in 5 steps:

- Step 1: Extrusion Flow
- Step 2: Flow Management
- Step 3: Cooling Fan
- Step 4: Warpage
- Step 5: Fine Details

It uses less than 300g of materials and less than 7h of working time.

Each of these steps has a specific objective and introduces an important concept about the FFF 3D printing process. Each step will also give you the possibility to push your test further for more accurate results.
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<th>PC</th>
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<td>Young’s modulus (MPa)</td>
<td>1832</td>
<td>1986</td>
<td>2634</td>
<td>2048</td>
<td>2307</td>
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<td>Tensile strength (MPa)</td>
<td>39.9</td>
<td>41.8</td>
<td>67</td>
<td>59.7</td>
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<td>Elongation at break (%)</td>
<td>4.2</td>
<td>4.6</td>
<td>3.9</td>
<td>12.2</td>
<td>3.2</td>
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<td>Bending modulus (MPa)</td>
<td>2081</td>
<td>1933</td>
<td>2518</td>
<td>2044</td>
<td>2477</td>
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<tr>
<td>Bending strength (MPa)</td>
<td>66.3</td>
<td>64.4</td>
<td>96.6</td>
<td>94.1</td>
<td>100.4</td>
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<tr>
<td>Charpy impact strength (kJ/m²)</td>
<td>25.8</td>
<td>21.4</td>
<td>11.7*</td>
<td>25.1</td>
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*The flame retardant significantly reduces the toughness of the raw PC material but the composition still provides a good balance between mechanical properties and flame retardant performance.

**Note:** Tested with 3D printed specimens.
Polymaker™ PC-PBT

Polymaker™ PC-PBT features two main properties which distinguish it from the other Polymaker PC materials:

**Good chemical resistance**

Polymaker™ PC-PBT is resistant to hydrocarbons, alcohols, organic acids, inorganic aqueous salts, and dilute base and acid solutions. This makes them suitable for applications requiring resistance to intermittent contact with many lubricants, solvents, fuels, oils, cleaning agents, and other automotive-type chemicals.

**Note:** Polymaker™ PC-PBT is not resistant to strong alkalis or chlorinated, aromatic, ketone- or ester-containing solvents.

**Note:** Additional influence parameters of the chemical resistance properties of material are the:
- Composition of the surrounding media
- Temperature
- Duration of exposure
It is essential to test them under actual operating conditions first.

**Low temperature impact resistance**

Polymaker™ PC-PBT has a high resistance to impact. It also features an excellent low temperature toughness keeping more than 70% of its impact resistance at -30°C.
Material Development

If your application requires a specific material that is not yet available in the market, consider our custom development service. With our talented material scientists and application engineers, we are ready to develop the necessary materials to enable your unique application.

Our state-of-the art R&D facilities allow us to engineer materials at different levels and fully optimize them for 3D printing. Our goal is to deliver materials with the right combination of properties/functions, processability and form to suit your needs!
Polymaker products

PolyLite™
PLA
PETG
ABS
PC
ASA

PolyMax™
PLA
PETG
PC
PC-FR

PolyFlex™
TPU95

PolyMide™
CoPA
PA6-CF
PA6-GF

PolyDissolve™
S1
S2

Specialty
PolyWood™
PolySmooth™
PolySupport™
PolyCast™
Polymaker™ PC-PBT
Polymaker™ PC-ABS

Hardware
PolyBox™
Polysher™

More products coming soon...

Industrial range:
Technologies

**JAM-FREE™**
Regular PLA
- With Jam-Free™

**ASH-FREE™**
Without Ash-Free™
- Ash content: 0.5%
- With Ash-Free™
- Ash content: 0.003%

**WARP-FREE™**
Regular Nylon
- With Warp-Free™

**STABILIZED FOAMING™**
Wood
- Stabilized Foaming™

**LAYER-FREE™**
Rough surface
- With Layer-Free™

**FIBER ADHESION™**

**NANO-REINFORCEMENT**
About Polymaker

Our Values

Customer Oriented  Responsible  Entrepreneurial  Embracing Innovation

Mission

Polymaker is committed to lowering the barriers to innovation and manufacturing, by continuously developing advanced 3D printing material technologies for industries and consumers.
The information provided in this document is intended to serve as basic guidelines on how particular product can be used. Users can adjust the printing conditions based on their needs and actual situations. It is normal for the product to be used outside of the recommended ranges of conditions. 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 particular use or application. Polymaker shall not be made liable for any damage, injury or loss induced from the use of Polymaker materials in any particular application.