



Polymaker™ PC-PBT



Industrial

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[www.polymaker.com](http://www.polymaker.com)





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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](http://www.polymaker.com)

# PCP: Profile Creation Process

The profile creation process (PCP) allows users to rapidly develop a printing profile for a given material/printer. It is important to consider all of these factors to build a profile.

- Geometry
- Material
- Printer
- Environment
- Purpose

Polymaker came up with a process which allows you to build your own profile considering the material, printer and environment. This base profile will then be used to create the custom profile taken in account the model geometry and purpose. Indeed the process is also designed to let you learn more about the 3D printing process and therefore give you the skills and knowledge to troubleshoot your prints.

**The PCP is available on [www.polymaker.com](http://www.polymaker.com)**

The PCP is divided in 5 steps:

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

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

Each of these steps has a specific objective and introduce 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.



# Polymaker PC materials



Specialty



Specialty



PolyMax™



PolyMax™



PolyLite™

	PC-ABS	PC-PBT	PC-FR	PC	PC
Young's modulus (MPa)	1832	1986	2634	2048	2307
Tensile strength (MPa)	39.9	41.8	67	59.7	62.7
Elongation at break (%)	4.2	4.6	3.9	12.2	3.2
Bending modulus (MPa)	2081	1933	2518	2044	2477
Bending strength (MPa)	66.3	64.4	96.6	94.1	100.4
Charpy impact strength (kJ/m <sup>2</sup> )	25.8	21.4	11.7*	25.1	3.4

\*The flame retardant will significantly reduce the toughness of the raw PC material, Polymaker found the right balance between the mechanical properties and the 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 mild 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

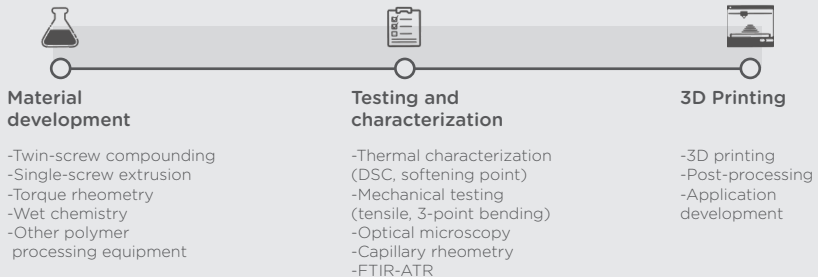
It is essential to test them under actual operating conditions first.

## Low temperature impact resistance

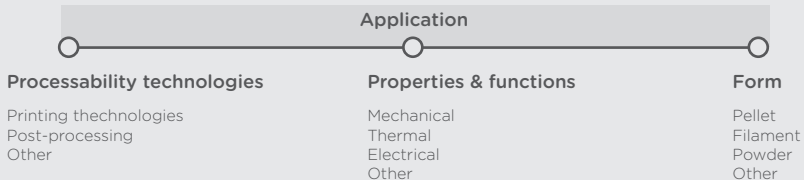
Polymaker™ PC-PBT has a high resistance to impact. It also features an excellent low temperature toughness keeping more than 70% of its impact resistance at  $-30^{\circ}\text{C}$ .

# 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 needed material 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 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™

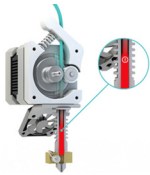
More products  
coming soon...

Industrial range: 

# Technologies

## JAM-FREE™

Regular PLA



With Jam-Free™



## ASH-FREE™

Without Ash-Free™  
Ash content: 0.5%

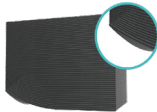


With Ash-Free™  
Ash content: 0.003%

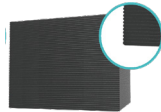


## WARP-FREE™

Regular Nylon



With Warp-Free™



## STABILIZED FOAMING™

Wood



Stabilized Foaming™



## LAYER-FREE™

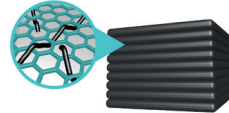
Rough surface



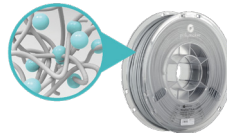
With Layer-Free™



## 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.

# Contact us

For any inquiries please contact:

[inquiry@polymaker.com](mailto:inquiry@polymaker.com)

For technical support please contact:

[support@polymaker.com](mailto:support@polymaker.com)

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



polymaker