



Polymaker™ PC-ABS



Industrial

For other languages, please visit  
[www.polymaker.com](http://www.polymaker.com)





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# Printing with Polymaker™ PC-ABS

## Polymaker™ PC-ABS

Polymaker™ PC-ABS is a PC/ABS polymer blend which offers excellent toughness and heat resistance while displaying good surface finish and good compatibility with metal plating.



### Printing settings

Nozzle Temperature:	250-270 °C
Bed Temperature:	90-105 °C
Chamber Temperature:	90-100 °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-ABS 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.

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### **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.

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### **Annealing Polymaker™ PC-ABS parts**

We recommend annealing all models printed in Polymaker™ PC-ABS. 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 100 °C for 2 hours.

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### **Support material**

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

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-ABS

Polymaker™ PC-ABS is a material with good surface adhesion which makes it easier to post process:

## Metallizing

Polymaker™ PC-ABS can be metallized by deposition of a metallic layer in a high vacuum or by electroplating. In the metal deposition process, the best adhesion is achieved with aluminum, tin and copper. As protection for the very thin layer of metal, a coating of paint on the molding is recommended. In the case of electroplating, Polymaker™ PC-ABS offers the best adhesion for the electroless plating for its first layer.

## Painting

Polymaker™ PC-ABS is well-suited for painting. To ensure a good paint finish, the surfaces must be clean (free of dust or grease). Particularly good adhesion is achieved using polyurethane-based coating systems. Unsuitable combinations of solvents in the paint system can attack the material and, depending on the stress condition of the parts, may initiate stress cracking. It is therefore recommended to contact the paint manufacturers who can supply suitable paint systems especially for PC-ABS blend.

## Welding

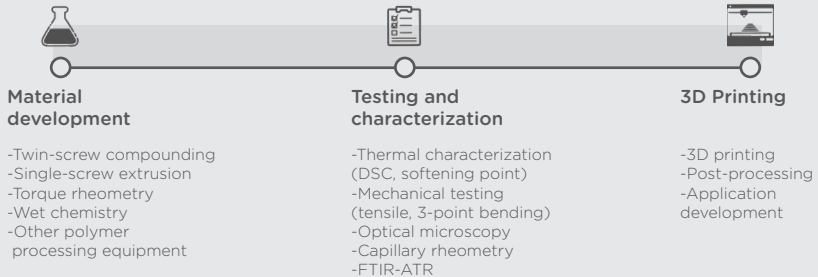
Polymaker™ PC-ABS parts can be joined together by ultrasonic, vibration, friction, hot plate or laser welding. In order to achieve the best possible component quality when using ultrasonic welding, it is important to ensure a correctly formed weld seam

## Bonding

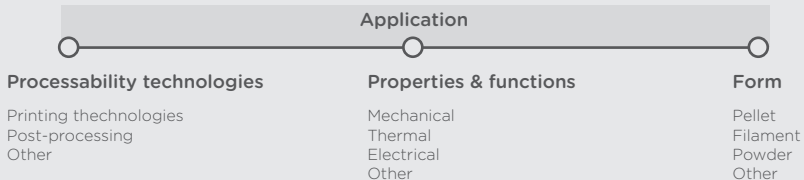
Polymaker™ PC-ABS parts can be bonded not only to one another, but also to other materials. This is possible using suitable adhesive glues or diffusion adhesive. Before gluing, greases and other foreign materials must be removed from the surfaces to be glued. Dry-cleaning fluid or similar cleaning agents, which do not damage the material, can be used to remove grease. Roughening and subsequently cleaning the surfaces improves glue adhesion. In the case of adhesive glues, two-component adhesives based on epoxy and silicone resins and polyurethanes have proved excellent.

# 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™

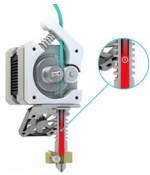
More products  
coming soon...

Industrial range: 

# Technologies

## JAM-FREE™

Regular PLA



With Jam-Free™



## ASH-FREE™

Without Ash-Free™  
Ash content: 0.5%

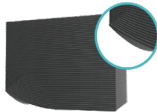


With Ash-Free™  
Ash content: 0.003%

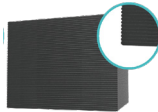


## WARP-FREE™

Regular Nylon



With Warp-Free™



## STABILIZED FOAMING™

Wood



Stabilized Foaming™



## LAYER-FREE™

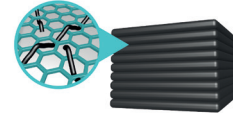
Rough surface



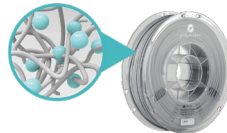
With Layer-Free™



## 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