



PC

Polycarbonate

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# Background

Polycarbonate (PC) is a high performance material intended for use in engineering and industrial settings.

As suggested by its name, PC contains carbonate groups that contribute significantly to its strength and toughness.

PC also has excellent temperature resistance, making it useful in high temperature applications as well.

Its strength, toughness, and temperature resistance makes it a useful material for final production or industrial parts.

PC is also useful with electronics since it is an insulator.

# Applications

PC's high performing properties make it a good choice for industrial applications.

Parts made from PC can withstand the demanding environment found in industry.

PC is also a good choice for storage, especially electronic enclosures.

Since PC does not conduct electricity, sensitive electronics will remain safe in PC enclosures.

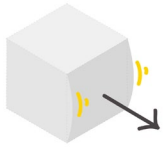
Many of the parts on re:3D Gigabot printers is made with PC.

PC is perfect for any parts that needs to resist high temperatures.

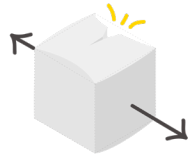
- > Electronic Enclosures
- > Industrial Parts
- > Heat Resistant Parts
- > Storage

# Material Properties

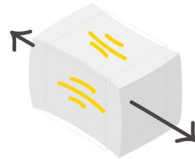
## Mechanical



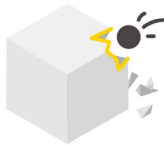
Young's Modulus  
2,400 MPa



UTS  
 $59.7 \pm 1.8$  MPa



Tensile Elongation  
 $12.2 \pm 1.4$  %



Impact Strength  
 $25.1 \pm 1.9$  J/m<sup>2</sup>

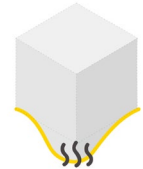


Shrinkage  
-

## Thermal



Glass Transition  
113 °C

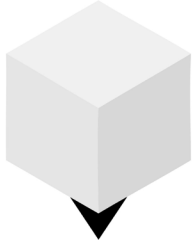


Heat Distortion  
-

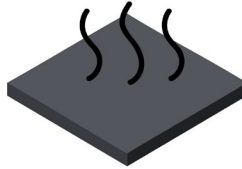


Decomposition  
>360 °C

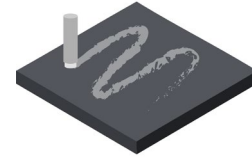
# Printer Settings



Extruder Temperature  
250 °C



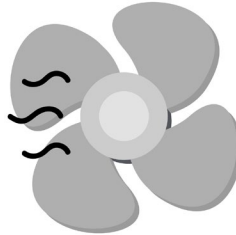
Heated Bed Temperature  
115 °C



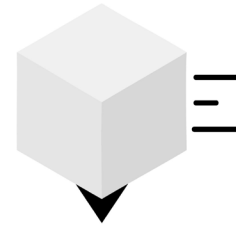
Bed Adhesion  
Adhesive Required



Enclosure  
Yes



Fans  
On



Printing Speed  
3,600 mm/min

# Sustainability

Polycarbonate is recycled most often into a reground material.

This material is often considered for use in a pellet extrusion machine such as GBX.

Polycarbonate is not usually supported by recycling centers since it is grouped into resin code 7 with “other plastics”.

Polycarbonate also risks producing bisphenol A, commonly known as BPA.

# PC Validated Suppliers



Coex



Polymaker PolyMax



MCP  
PC-ABS V0



# Questions?

Please, do not hesitate to reach out to **support@re3d.org** via email or visit **re3d.org/support** if you have any more questions about PC.

# Want to validate your material?

Would you like to see your material listed as a validated supplier? Our engineers welcome your 2.85mm spools! Email **info@re3d.org** for more information.

# Sources

- > <https://www.simplify3d.com/support/materials-guide/nylon/>
- > <http://brandsdevelop.com/3d-sneakers/>
- > <https://all3dp.com/2/3d-printed-gears-get-the-gear-that-fits-your-needs/>
- > <https://www.3dhubs.com/knowledge-base/automotive-3d-printing-applications/>
- > <https://www.amputee-coalition.org/3d-printed-prosthetics/>
- > <https://fishyfilaments.com/>