



PET

Polyethylene
Terephthalate

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Background

Polyethylene Terephthalate (PET) is a durable material with a glossy appearance. Outside of PLA and ABS, PET is a very common filament.

A variation of PET, PETG, is often sold as a filament as well. PETG is a form of Polyethylene Terephthalate (PET) with glycol introduced.

The introduction of glycol causes PET to become more flexible and resistant to impacts. PETG also resists shrinking and sticks to other materials easily, unlike other materials that print at a similar nozzle temperature to PETG.

These properties allow PETG to fill a role between PLA and ABS as a strong, easy to print material. PETG is used for water bottles, oil containers, and plastic packaging.

Recycled versions of PET and PETG, often called rPET, is a go-to recycled material for many closed loop applications.

For those looking to branch from PLA and create more durable parts, PET, PETG, and rPET are good choices.

Applications

PETG excels when you take advantage of its material properties.

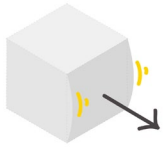
If you need something that can endure the outdoors, PETG's impact strength makes it a suitable material.

Its chemical makeup makes it bond easily to other materials and serve as a versatile support material.

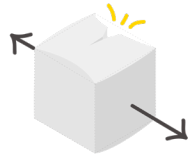
- > Containers
- > Raft & Support Material
- > Outdoors Applications

Material Properties

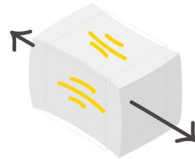
Mechanical



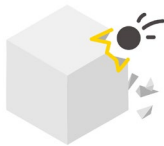
Young's Modulus
2,100 MPa



UTS
-



Tensile Elongation
130 %



Impact Strength
100 J/m

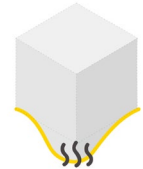


Shrinkage
0.0004 mm/mm

Thermal



Glass Transition
80 °C

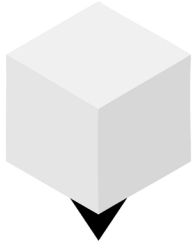


Heat Distortion
70 °C

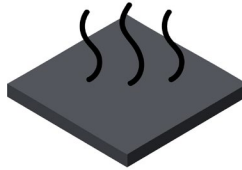


Decomposition
280 °C

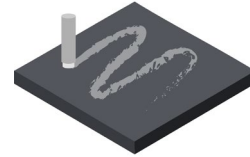
Printer Settings



Extruder Temperature
235 °C



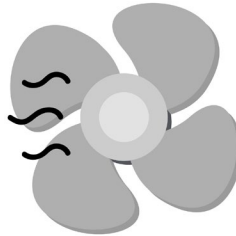
Heated Bed Temperature
70 °C



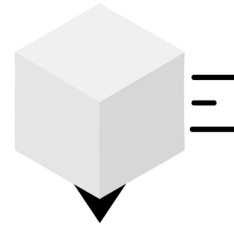
Bed Adhesion
Adhesive Needed for
PET, Optional for PETG



Enclosure
Optional



Fans
-



Printing Speed
3,600 mm/min

Sustainability

PET is one of the most commonly recycled materials. Reground PET is often turned into rPET filament for 3D printing.

PETG is technically recyclable, but it is often rejected from commercial recycling centers due to its low melting point causing issues when recycled with other materials.

It may be possible to regrind PETG and to reuse it in pellet fed printers such as GBX.

PET Validated Suppliers



MCPP
PET-G



Coex
PET-G



Innofil
rPET



GreenGate
rPET-G



MatterHackers
PET-G



MCPP
CF PET-G



Polymaker
PolyMax PET-G



Polymaker
PolyLite PET-G

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 PET.

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/petg/>
- > <https://rigid.ink/blogs/news/how-to-print-clear-filament-more-clearly>
- > <https://www.youtube.com/watch?v=3lZlyzYJd-I>
- > <https://all3dp.com/2/3d-printer-recycled-plastic-tips-for-your-waste-plastic/>