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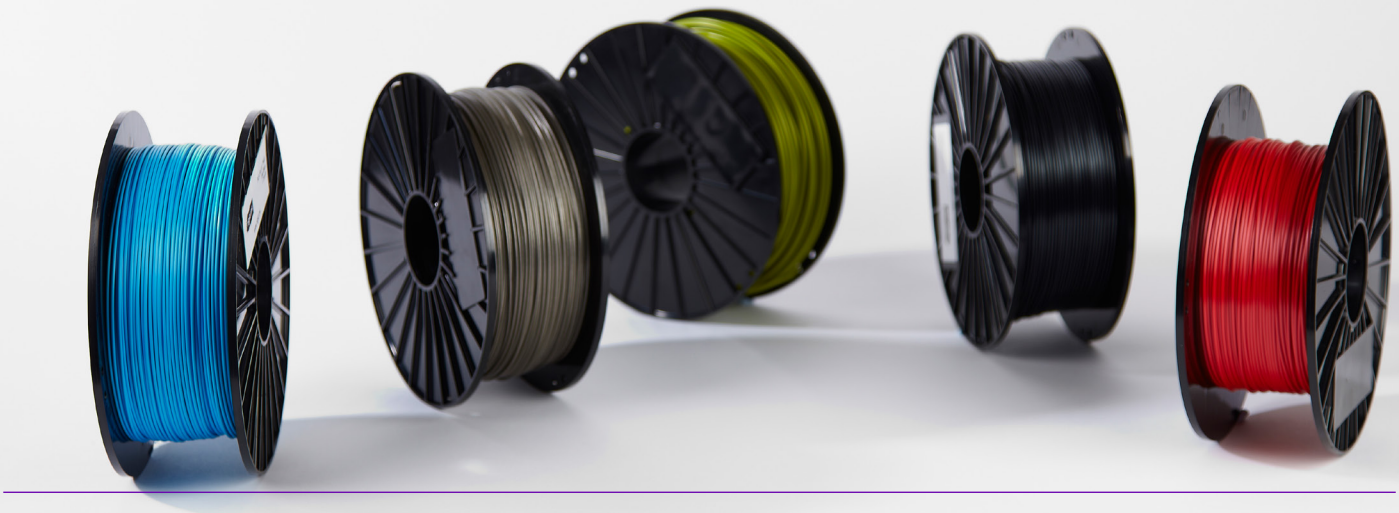
PETG
Technical Data Sheet



HIGHEST RATED FILAMENT ON AMAZON
60-DAY MONEY BACK GUARANTEE

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Description:

A high-impact, durable copolyester filament that has low shrinkage during printing and produces very little odour during this process.
Printed objects are tougher and less brittle than ones produced in ABS.

Applications:

Toys, covers, boxes, 3D-printer parts, school projects, 'living hinges', etc.
Suitable for use where other thermoplastics such as ABS or PLA would readily deform under pressure.
Other uses include – blister packaging, pressurised drink bottles, medical equipment, sporting goods, drug bottles, and so on.

Recommended Print Settings:

Printing Temps 1.75mm	220-240°C
Printing Temps 2.85mm	225-245°C
Heated Bed Temp	70-80°C
Cooling Fans	None/or as needed for small parts and fine details
Ideal Build Volume	Fully enclosed
Extrusion Multiplier	x1.0 (100%)
Retraction (direct drive)	Try 1.4mm as a starting point at 20-30mm/s
Retraction (bowden feed)	Varies per printer, as above, but try 3mm as a starting point
Print Speed Advisory	Use speeds of <60mm/s in order to obtain optimal layer results
Print Surface Advisory	May bond destructively to PEI and BuildTak surfaces if first layer printed too close to bed
Print Layer Advisory	Do not over extrude

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General Advice:

Consider putting a treatment on the surface of the bed such as glue stick, 3DLAC, etc., to moderate the adhesion to the bed surface. Increasing the gap to the print bed of the initial layer is also a good idea.

Ensure that the outside of the nozzle is perfectly clean before commencing a print, and do not over-extrude – if the nozzle is dirty or you do over-extrude, the nozzle can eventually accrete a lump hardened PETG which may knock the printed object at some point, causing the print to fail.
With retraction – it is better to have a bit too much than too little. See the comment above about PETG accretion on the nozzle.

Properties:

Typical Properties(1)	Value	Test Standard
Density	1.27g/cm³	ISO 1183 (D)
Glass Transition Temperature	80°C	DSC(2)
Rockwell Hardness R	109 R	ISO 2039-2
Light Transmittance	85%	ASTM D1746
Regular Transmittance	89%	ASTM D1003 (Modified)
Total Transmittance	91%	ASTM D1003 (Modified)
Water Absorption (24hr)	0.13%	ISO 62
Tensile Stress at Break	4.1kpsi, 28MPa	ISO 527
Tensile Stress at Yield	7.3kpsi, 50MPa	ISO 527
Elongation at Break	100%	ISO 527
Tensile Modulus	300kpsi, 2.1GPa	ISO 527
Flexural Strength at Yield	9.86kpsi, 68MPa	ISO 178
Tensile Strength at Break	4.1kpsi, 28MPa	ISO 527
Flexural Modulus	290kpsi, 2.0GPa	ISO 178
Izod Impact Strength (notched) @ 23°C @ -40°C	 2.95lbf•ft/in², 6.2kJ/m² 1.99lbf•ft/in², 4.2kJ/m²	 ISO 180 (Type1/A) ISO 180 (Type1/A)
Heat Deflection Temperature 0.455MPa (66psi) 1.82MPa (264psi)	 70°C 64°C	 ASTM D648 ASTM D648
Vicat Softening Temperature	85°C	ASTM D1525

(1) NOT to be construed as specifications
(2) DSC = Differential Scanning Calorimetry
All tests were run at 23°C and 50% relative humidity unless otherwise specified

Other Info:

Very durable. More flexible than PLA or ABS, but also a little softer.

Very low shrinkage, and therefore little to no warping. Ideal for printing big dense objects.

PETG is also very strong, it's not brittle but can be scratched more easily than ABS which is harder.

PETG plastic does not make a good support structure as it tends to stick to everything – especially itself.

Consider using our HIPS or Break-Away materials for supports.

Amazing inter-layer adhesion - prints come out strong.

Good chemical resistance, along with alkali, acid and water resistance.

Odourless when printing.

May be 'polished' using the same vapour-polishing method as ABS/ASA, but use dichloromethane instead of acetone. (Please be aware that dichloromethane is considerably more toxic than acetone, so take the appropriate precautions if this process is used).

A full reel of damp filament can be dried at 60-70°C for up to 8 hours in a temperature-controlled circulating air dryer.

Print Surface Materials:

Bed surface such as PEI, BuildTak, and similar bed surface materials, may be ruined if PETG is printed too close/squished into the surface. PETG bonds very strongly to these surfaces.

It is advised that you take precautions to mitigate this possibility of this occurring by either using a surface adhesive/modifier such as glue-sticks or 3DLAC, (other treatments are available) and also increasing the nozzle-to-bed gap by more than you would normally print with.

Bed surfaces must be kept clean with the appropriate cleaning fluid/solvent in order to obtain reliable adhesion, while taking into account the warning about PEI and BuildTak mentioned above.

Despite PETG warping less than ABS, to keep warping to a minimum, the use of a heated bed is advised.

Print Surface Materials:

As with all filaments, only print in an area with good ventilation, away from pets, and avoid breathing in any fumes or particles that will be released during the printing process.

Always wear eye protection around 3D printers and their materials, especially while in use.

It is always good practice to wear facemasks as a precautionary measure when 3D printing.

Keep away from food, and wash hands after use.

Do not touch the molten plastic - It will cause severe burns if it comes into contact with bare skin.

If bodily contact does occur, irrigate the affected area with copious amounts of cold water.

Do not attempt to remove the hardened plastic.

Seek medical attention.

The material stock used to create rigid.ink PETG has been GREENGUARD INDOOR AIR QUALITY CERTIFIED®. The GREENGUARD INDOOR AIR QUALITY CERTIFIED® Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute (GEI). GEI is an industry-independent, non-profit organisation that oversees the GREENGUARD Certification Programme.
The GREENGUARD Certification Programme is an industry independent, third-party testing programme for low-emitting products and materials for indoor environments.

PLEASE NOTE: This does not mean that normal sensible safety guidelines with respect to possible particulate or fume exposure shouldn't be observed. Please be safe.
