

PCTG 3D Printing Filament – Technical Data Sheet (TDS)

Product Name: PCTG Filament

Material Type: Copolyester (PETG Family – Enhanced Grade)

Brand: Fabbxible

1. Product Overview

PCTG (PolyCyclohexylenedimethylene Terephthalate Glycol) is a high-performance copolyester known for its **excellent impact strength**, **clarity**, and **enhanced heat resistance** compared to standard PETG. It offers a balance of toughness, chemical resistance, and ease of printing, making it suitable for functional parts, mechanical components, and consumer products.

2. Key Features & Benefits

- **High impact resistance** (up to 3× stronger than PETG)
 - **Improved heat resistance** (up to 90–95°C depending on grade)
 - **Low warping & stable dimensional accuracy**
 - **High clarity (transparent colors)**
 - **Good layer adhesion**
 - **Odorless during printing**
 - **Excellent chemical resistance**
 - **Suitable for mechanical prototypes & end-use parts**
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3. Recommended Printing Settings

Parameter	Value
Nozzle Temperature	250–270°C
Bed Temperature	70–90°C
Chamber Temperature	Not required (optional 30–50°C for best results)
Nozzle Size	0.4 mm (recommended), 0.6 mm also suitable
Print Speed	40–80 mm/s
Cooling Fan	30–70%
Drying Temperature	65–70°C for 4–6 hours

Note: PCTG absorbs some moisture; drying before printing is recommended for best clarity and layer adhesion.

4. Mechanical Properties

(Typical values; may vary depending on printer, environment, and test method)

Property	Test Standard	Typical Value
Density	ASTM D792	1.27 g/cm³
Tensile Strength	ASTM D638	48–55 MPa
Tensile Modulus	ASTM D638	1900–2200 MPa
Elongation at Break	ASTM D638	80–150%
Flexural Strength	ASTM D790	65–75 MPa
Flexural Modulus	ASTM D790	1900–2100 MPa
Impact Strength (Izod, Notched)	ASTM D256	10–12 kJ/m² (very high impact)

5. Thermal Properties

Property	Test Standard	Typical Value
Glass Transition (Tg)	DSC	75–80°C
Heat Deflection Temperature	ASTM D648	90–95°C (at 0.45 MPa)
Melting Point	–	Amorphous (no clear melting point)

6. Other Properties

Property	Typical Value
Shrinkage	Low (0.2–0.4%)
UV Resistance	Moderate
Chemical Resistance	Good against oils, detergents, dilute acids/bases
Food Contact Safety	Raw PCTG resin is FDA-compliant (self-declaration required)

7. Storage & Handling

- Store in a **dry, cool environment**.
 - Seal filament in a ziplock bag or dry box when not in use.
 - If moisture is present (stringing, popping sound), **dry before printing**.
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8. Applications

- Mechanical prototypes & enclosures
- High-strength functional parts
- Transparent components
- Household products
- Industrial jigs & fixtures

- Cosmetic containers & consumer products
 - Food-contact concepts (subject to compliance requirements)
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9. Packaging Information

- **Diameter:** 1.75mm
- **Weight:** 1kg (net) per spool
- **Diameter Tolerance:** $\pm 0.03\text{mm}$
- Vacuum-sealed with desiccant