Filazoo Filament

Technical Data Sheet V1.0

PETG-CF

Carbon-Fibre Reinforced PETG — stiffer, low-warp structural filament

DOCUMENT NO.	REVISION	ISSUE DATE	DIAMETER	NET WEIGHT
FZ-TDS-PETGCF-001	V1.0	28/08/26	1.75 mm	1 kg

1 Description

Filazoo PETG-CF adds chopped carbon fibre to a PETG base, overcoming the relatively low stiffness of standard PETG while keeping the low warping and easy bed adhesion that make PETG popular. The fibre reinforcement raises flexural and tensile performance and gives parts a matte, fibre-textured finish. With a heat deflection temperature of approximately 105 °C at 0.45 MPa, it suits structural, load-bearing parts that need more rigidity than PETG or PLA+ without moving to a high-temperature engineering polymer.

Typical applications — structural brackets and enclosures, drone frames, jigs and fixtures, and functional prototypes that need extra stiffness over standard PETG while keeping easy, low-warp printing.

Processing summary — the carbon fibre is abrasive, so a hardened or diamond-tipped nozzle is recommended. PETG-CF prints almost as easily as standard PETG — moderate cooling and a clean glass or PEI bed give good adhesion without an enclosure.

2 Product Specification

Table 1 — Filament and packaging specification

PARAMETER	UNIT	VALUE
Filament diameter	mm	1.75
Diameter tolerance	mm	± 0.03
Net filament weight	kg	1
Spool material	—	*ABS (heat resistance 70 °C)*
Spool dimensions (ø × H)	mm	*ø 200 × 67 mm*
Colour range	—	*Black*

3 Recommended Printing Parameters

Table 2 — Recommended starting parameters

PARAMETER	UNIT	VALUE
Drying before printing	°C / h	*65 °C for 8 h*
Printing and storage humidity	—	`Dry storage; sealed with desiccant`
Nozzle size	mm	*≥ 0.4 (0.6 recommended)*
Nozzle type	—	`Hardened steel / diamond tip (required)`
Nozzle temperature	°C	`250 – 270`
Build plate type	—	*Glass or PEI*
Bed surface preparation	—	*Clean; light adhesive if needed*
Bed temperature	°C	`90 – 110`
Part cooling fan	—	`Medium to high`
Printing speed	mm/s	`40 – 150`
Enclosed chamber	—	`Not required`
Chamber temperature	°C	*25 – 45*
Retraction length / speed	mm / mm·s⁻¹	*0.6 – 1.0 mm / 20 – 40 mm·s⁻¹*
Max overhang angle	°	*~ 70*
Max bridging length	mm	*~ 30*

Values are starting points; optimum settings vary with printer, hotend and part geometry.

4 Material Properties

Values are typical results measured on standard printed specimens and are intended for design reference and comparison. They are not guaranteed minima.

4.1 Physical and thermal properties

Table 3 — Physical and thermal properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Density	ISO 1183	g/cm³	*~ 1.25*
Melt flow rate (MFR)	210 °C, 2.16 kg	g/10 min	`~ 1.4 ± 0.2`
Melting temperature	DSC	°C	`~ 250`
Glass transition temperature	DSC	°C	`~ 80`
Vicat softening temperature	ISO 306	°C	`~ 85`
Heat deflection temperature	ISO 75, 0.45 MPa	°C	`~ 105`
Heat deflection temperature	ISO 75, 1.8 MPa	°C	`~ 95`
Saturated water absorption	25 °C, 55 % RH	%	*~ 0.3*

4.2 Mechanical properties

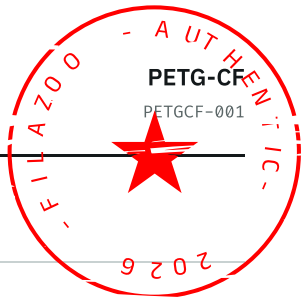
Table 4 — Mechanical properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Young's modulus (X–Y)	ISO 527 / GB/T 1040	MPa	~ 2500 ± 150
Young's modulus (Z)	ISO 527 / GB/T 1040	MPa	~ 1900 ± 150
Tensile strength (X–Y)	ISO 527 / GB/T 1040	MPa	~ 50 ± 4
Tensile strength (Z)	ISO 527 / GB/T 1040	MPa	~ 45 ± 4
Elongation at break (X–Y)	ISO 527 / GB/T 1040	%	~ 12
Elongation at break (Z)	ISO 527 / GB/T 1040	%	~ 6
Flexural modulus	ISO 178 / GB/T 9341	MPa	~ 2700 ± 130
Flexural strength	ISO 178 / GB/T 9341	MPa	~ 80 ± 5
Impact strength, notched	ISO 179 / GB/T 1043	kJ/m²	~ 6.5
Impact strength, unnotched	ISO 179 / GB/T 1043	kJ/m²	~ 16

4.3 Chemical and physical characteristics

Table 5 — General characteristics of PETG-CF

PARAMETER	VALUE
Composition	Carbon-fibre reinforced PETG (PETG-CF)
Odour	Slight odour when printing
Skin hazard	Cut fibre ends can be sharp — gloves recommended
Chemical stability	Stable under normal storage and handling
Solubility	Insoluble in water
UV and weathering resistance	Moderate — similar to standard PETG
Acid resistance	Resistant to dilute acids
Alkali resistance	Resistant to dilute bases
Organic solvent resistance	Not resistant to some organic solvents
Oil and grease resistance	Resistant to common oils and greases
Flammability	Flammable
Combustion products	Water, carbon oxides



5 Test Conditions

5.1 Specimen printing conditions

Table 6 — Conditions used to produce test specimens

PARAMETER	UNIT	VALUE
Nozzle temperature	°C	*260*
Bed temperature	°C	*100*
Printing speed	mm/s	*80*
Infill density	%	*100*
Layer height	mm	*0.2*
Specimen conditioning / annealing	°C / h	*23 °C / 50 % RH for 24 h (ISO 291)*

5.2 Specimen geometry

Test specimens follow the geometry defined by the referenced standards. All dimensions in millimetres.

Figure 1 — Tensile specimen

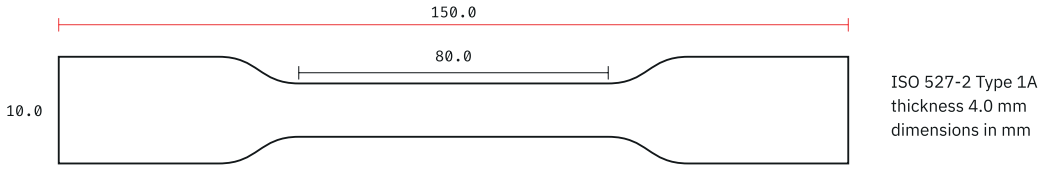


Figure 2 — Flexural specimen

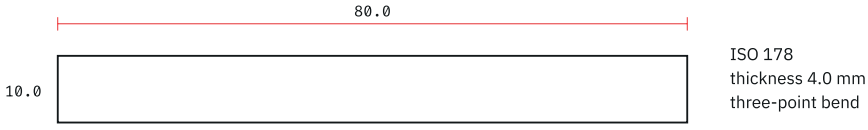
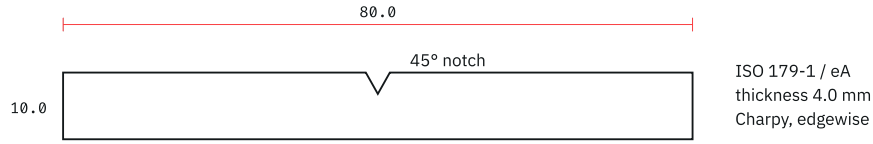


Figure 3 — Impact specimen



6 Disclaimer

The performance values in this document are typical values obtained from standard printed specimens. They are provided for design reference and comparison only and do not constitute a specification or a warranty of performance. Actual printed part performance depends on many further factors, including the printer, hotend and nozzle, slicer settings, part geometry, wall count and infill, build orientation, and ambient conditions.

Users are responsible for the legality, safety and suitability of anything they print. Filazoo accepts no responsibility for the use of its materials in any particular application, or for any damage arising in the course of using them.