HI-TEMP CF

Carbon fiber-filled bio-polymer blend, BigRep HI-TEMP CF

Printer **BigRep ONE · BigRep VIIO**

Process **Large-format FDM**

Filament **Ø 2.85 mm**

OVERVIEW

HI-TEMP CF is a carbon fiber-filled bio-polymer blend and our stiffest, strongest large-format material. It is built for lightweight, functional parts like patterns, molds and tooling.

The carbon fiber raises stiffness to about 7,000 MPa, well above the unfilled grades, while keeping parts light. Its Vicat softening point is 165 °C, and heat deflection under load is 57–74 °C.

KEY BENEFITS

- Highest stiffness and tensile strength in our large-format lineup
- Lightweight parts for tooling and fixtures
- Vicat softening point of 165 °C (329 °F)
- Matte, carbon-filled surface finish

MECHANICAL & THERMAL PROPERTIES

Property	Test method	Typical value
TENSILE & FLEXURAL		
Tensile strength	ISO 527	65 MPa 9,430 psi
Tensile modulus	ISO 527	7,000 MPa 1,015 ksi
Flexural strength	ISO 178	70 MPa 10,150 psi
Flexural modulus	ISO 178	7,200 MPa 1,044 ksi
IMPACT		
Charpy impact, notched	ISO 179	5 kJ/m²
THERMAL		
Heat deflection temp., 1.8 MPa (HDT A)	ISO 75	57 °C 135 °F
Heat deflection temp., 0.45 MPa (HDT B)	ISO 75	74 °C 165 °F
Vicat softening temp.	ISO 306	165 °C 329 °F
Melting temp. (Tm)	DSC	180 °C 356 °F

Printed parts are directional. BigRep does not state how its test specimens were made or oriented. On large-format FDM parts, strength across layers (Z) is noticeably lower than along them (XY). The values above are typical values, not guaranteed minimums. Design with margin and orient load paths in XY where you can.

GENERAL FILAMENT PROPERTIES

Material	Density	FDA compliant
Bio-polymer + carbon fiber Filament base	**1.36 g/cm³** ISO 1183	**No** Raw filament, per BigRep

DIMENSIONAL TOLERANCES

Direction	First inch (25 mm)	Each additional inch (25 mm)
XY (horizontal)	± 0.020 in · ± 0.51 mm	+ 0.003 in · + 0.08 mm
Z (vertical)	± 0.030 in · ± 0.76 mm	+ 0.003 in · + 0.08 mm

Typical IA3D tolerances for large-format FDM across our BigRep printers. Holes and bores print slightly undersize; drill or ream features that need a fit. Flatness and warp on large, thin or flat sections depend on geometry. For critical fits or tighter requirements, **talk to an engineer**.

TYPICAL APPLICATIONS

- Casting patterns and molds
- Composite layup and forming tools
- Lightweight jigs, fixtures and check fixtures
- End-of-arm tooling and manufacturing aids
- Large stiff brackets and structural prototypes

GOOD TO KNOW

- **Compliance:** REACH compliant and RoHS certified
- **Stiff, not tough:** 5 kJ/m² notched impact. Avoid sharp notches in loaded areas
- **As printed:** matte surface with visible layer lines

TEST CONDITIONS & SOURCE

Source: BigRep HI-TEMP CF filament data sheet (bigrep.com/filaments/hi-temp-cf, last updated 30.07.2025). Values are BigRep typical values tested to the ISO methods shown. BigRep does not state specimen preparation, orientation or print settings. Unit conversions and tolerances are by IA3D.

Disclaimer: Material properties are provided as a general reference to help with material selection. Actual part properties depend on geometry, orientation, wall thickness, build position, print settings and service conditions, and may differ from the values shown. This sheet does not guarantee specific properties or suitability for a particular application. Validate critical parts under real operating conditions.

Ready to make parts in HI-TEMP CF?

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Upload CAD files for pricing and lead time right away.
Get an instant quote →

Engineering review
Free design and material feedback from our engineers.
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