

CFC Composite Materials

Technical Data Sheet (Ver. 1.1, last updated: May, 2021)

CFC+CCF – 3D printed composite based on PA12 plastic reinforced with continuous carbon fibers.

CFC+CBF – 3D printed composite based on PA12 plastic reinforced with continuous basalt fibers.

| Composite Properties | Test method | Value CCF | Value CBF |
|---------------------------------|--------------------|------------------|------------------|
| Tensile Strength (MPa) | ASTM D3039 | 684.2 ± 14.6 | 414.9 ± 41.5 |
| Tensile Modulus (GPa) | ASTM D3039 | 55.4 ± 05 | 19.4 ± 1.5 |
| Tensile Strain at Break (%) | ASTM D3039 | 1.2 ± 0.1 | 2.15 ± 0.1 |
| Compressive Strength (MPa) | ASTM D6641 | 195.3 ± 12.4 | 92.5 ± 9.7 |
| Compressive Modulus (GPa) | ASTM D6641 | 52.0±2.3 | 19.7 ± 0.7 |
| Compressive Strain at Break (%) | ASTM D6641 | 0.5 ± 0.05 | 0.497 ± 0.095 |
| Bending Strength (MPa) | ASTM D 7264 | 226.7 ± 28.0 | 145.6 ± 9.0 |
| Bending Modulus (GPa) | ASTM D 7264 | 38.83 ± 3.29 | 17.69 ± 0.83 |

Printing conditions

- o Printing Temperature – 250 °C
- o Printing speed – 200 mm/min

Dimensions of Fiber Composite Test Specimens

- o The properties in this datasheet are based on the tests of unidirectional composite specimens with the direction of the fibers along the length (0° Plies)
- o Tensile test:
Specimen dimensions – 250 (Length) x 15 (Width) x 2 (thickness) mm.
- o Compressive test:
Specimen dimensions – 140 (Length) x 12 (Width) x 4(thickness) mm.
- o Bending test:
Specimen dimensions – 150 (Length) x 13 (Width) x 4(thickness) mm.
- o Test specimen schematic shape with fiber orientation is shown in Figure 1.

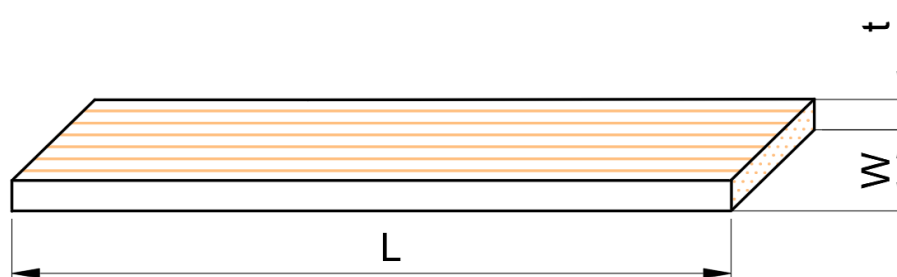


Figure 1. – Test specimen schematic shape

Disclaimer

Tests specimens are designed to maximize test performance. 3D printed specimens have 100% infill with unidirectional fiber. To learn more about specific testing conditions contact an Anisoprint representative. All customer parts should be tested according to customer specifications.

The values presented in this datasheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions.

End-use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice.