

TECHNICAL DATA SHEET

AthenaX CF10

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Product specifications

AthenaX CF10 combines all benefits of our AthenaX filament plus 10% carbon fibers. This carbon fiber reinforcement offers significant advantages. This filament is stiff and still impact resistant. It even shows a >59% improved tensile strength. AthenaX CF10 is the perfect material for 3D printing wear resistant parts.

This engineering filament is very easy to 3D print on open desktop machines. No enclosure, or heated chamber needed. Its low shrinkage factor and perfect layer adhesion make AthenaX CF10 a breeze to print with.

Important key features

- PCTG + 10% carbon fibers.
- HDT of 78°C / VICAT of 89°C.
- Stiff and Impact Resistant.
- 59% higher tensile strength than AthenaX.
- Super dimensional stability.

Suitable applications

- Packaging and containers.
- Housings and covers.
- 3D printing end-use parts.
- Small-scale production.
- Making tooling, equipment, and manufacturing aids.

Carbon fiber reinforcement explained

Reinforcing filaments with carbon results in great benefits. It combines the unique properties of both materials. The properties of the thermoplastic improve with everything carbon fibers offer. Carbon fibers offer lots of benefits, such as:

- Increasing stiffness
- Reducing weight
- Increasing tensile strength
- Increasing dimensional stability
- Reducing shrinkage / warping
- Increasing heat resistance
- Increasing chemical resistance
- Masking layer lines with a matt surface finish in 3D printed objects

This makes carbon fiber reinforced filaments extremely versatile for various 3D printing applications.

Material properties

Density

Typical value

1.28 g/cm³

Test Method

ASTM D 792

Mechanical properties

Tensile strength at yield

70 MPa

ISO 527

Tensile strength at break

65 MPa

ISO 527

Elongation at Break

5%

ISO 527

Izod Notched Impact Strength (23°C)

4kJ/m²

SO 179-1eU

Izod Unnotched Impact Strength (23°C)

45kJ/m²

SO 179-1eU

Thermal properties

HDT (@0.455MPa)

78°C

ISO 75

HDT (@ 1.820 Mpa)

68°C

ISO 75

Vicat softening temperature

89°C

DSC

Abrasiveness

Please be aware that carbon fiber reinforced filaments contain a relatively high concentration of extremely hard carbon fibers, which have an abrasive nature. In general these carbon fibers will accelerate the nozzle-wear of brass nozzles, much faster than unfilled filaments. We recommend to use ruby nozzles or hardened steel nozzles.

Pre-drying AthenaX CF10

AthenaX CF10 is a PCTG based filament plus 10% added carbon fibers. PCTG is moderately hygroscopic and therefore it is recommended to pre-dry the filament at 75°C for approximately 24 hours before usage for



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optimal results. You will get the most out of the material properties with pre-dried filaments. For optimal print results we recommend to print AthenaX CF10 filament from a drying box to avoid that the material can accumulate humidity from the environment.

Storage and handling

Filament should be stored at room temperature in a dry and dark place with humidity below 15%. Recommended storage temperature is ca. 18-25°C (64.4 -77.0°F). Keep out of moisture, sunlight and direct heat. When stored properly, product has a shelf life of 24 months. To obtain the best parameters of the printed object, it is recommended to dry the material prior to usage and to 3D print it directly from a dry box.

Product export information

HS Code	Description	Origin
39169090	Monofilament for 3D printing	European Union

Disclaimer

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