TECHNICAL DATA SHEET

Kratos PC CF10
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3D PRINTING MATERIALS

Product specifications

Kratos PC CF10 offers all benefits of our Kratos PC plus 10% added carbon fibers.
It utilizes our low warp technology plus added carbon fibers. This results in a unique set of properties. You can 3D print big parts that are very stiff and impact resistant. This makes Kratos PC CF10 a true advanced engineering filament.

Kratos PC CF10 has a good resistance to moisture, UV, chemicals, and abrasion. This filament is perfect for 3D printing parts used in demanding operating conditions. It is also heat-resistant up to 150 °C. With Kratos PC CF10 you can 3D print large and durable parts. Detailed parts with a high dimensional accuracy and almost no warping.

Important key features

- Kratos PC + 10% carbon fibers.
- HDT B of 139°C / Vicat of 150°C.
- Stiff, durable, and impact resistant.
- Good UV resistance.
- High speed printing compatible up to 200 mm/s.

Suitable applications

- 3D printing automotive parts.
- Functional prototyping.
- 3D printing end-use parts.
- Industrial tooling.
- Manufacturing electronic components.

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.

Recommended print settings

Nozzle temp: 270 - 310°C
Heat bed: 100 - 130°C
Fan speed: 0 - 25%
Print speed: 25 - 200 mm/s
Nozzle: ≥ 0.6mm
Buildplate adhesion: PC adhesive
Drying: 75°C / 24 hours
Drybox: Recommended
Enclosure: Recommended
Experience level: Intermediate

Material properties	**Typical value**	**Test Method**
Specific Gravity	1.22 g/cm3	ASTM D 792
Mechanical properties		
Tensile strength at yield (50mm/min)	76 MPa	ISO 527
Tensile elongation at break (50mm/min)	>100%	ASTM D 638
Flexural Strength (15mm/min)	920 kg/cm2	ASTM D 790
Flexural Modulus (15mm/min)	24.000 kg/cm2	ASTM D 790
Izod Notched Impact Strength (23°C)	70 kg·cm/cm	ASTM D 256
Thermal properties		
HDT B (0.45mn/m^2)	140°C	ASTM D 648
HDT B (1.81mn/m^2)	129°C	ASTM D 648
Vicat softening temperature	150°C	ASTM D 1525

Abrasiveness and nozzle size

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.

We advise to use at least a 0.6mm nozzle for carbon fiber filled filaments.

Pre-drying Kratos PC

Kratos PC CF10 is a hygroscopic filament and therefore it is necessary to pre-dry the filament at 75°C for approximately 24 hours before usage. For optimal print results we recommend to print Kratos PC CF10 filament from a drying box to avoid that the material can accumulate humidity from the environment.

Buildplate adhesion

For optimal buildplate adhesion we recommend to use a dedicated PC buildplate adhesive and depending on the geometry to print a brim around your model. The brim is advised to hold down the edges of your part, which can prevent warping and help improve bed adhesion.

Enclosure recommended for large(r) prints

Kratos PC CF10 can be 3D printed on open printers without a closed chamber for small(er) parts. For large(r) parts we do recommend to use a 3D printer with closed chamber.

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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