

# TECHNICAL DATA SHEET

AthenaX GF10

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## Product specifications

AthenaX GF10 combines all benefits of our AthenaX filament plus 10% glass fibers. This glass fiber reinforcement has significant advantages. It offers not only great electrical- and thermal insulation properties. Your 3D printed parts will not only be stiff, strong and durable. They will also be resistant to wear and chemicals. In short, AthenaX GF10 is your go-to engineering filament. Even for the most demanding applications.

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 GF10 a breeze to print with. Both on desktop and large format 3D printers.

## Important key features

- PCTG + 10% glass fibers.
- HDT of 78°C / VICAT of 77°C.
- Great electrical- and thermal insulation specs.
- Durable and good resistance to corrosion.
- High stiffness and tensile strength.

## Suitable applications

- Manufacturing safety devices.
- Housings and covers.
- 3D printing electrical safety components.
- Small-scale production.
- Making tooling, equipment, and manufacturing aids.

## Glass fiber reinforcement explained

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

- Increasing stiffness
- Increasing 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 glass fiber reinforced filaments perfect for 3D printing applications that require mechanical strength and stiffness.

## Material properties

Density

## Typical value

1.31 g/cm<sup>3</sup>

## Test Method

ASTM D 792

## Mechanical properties

Tensile strength at yield

55 MPa

ISO 527

Tensile strength at break

25 MPa

ISO 527

Elongation at Break

8%

ISO 527

Izod Unnotched Impact Strength (23°C)

45kJ/m<sup>2</sup>

ISO 179-1eU

## Thermal properties

HDT (@0.455MPa)

78°C

ISO 75

HDT (@ 1.820 Mpa)

68°C

ISO 75

Vicat softening temperature

77°C

DSC

## Abrasiveness

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



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## Pre-drying AthenaX GF10

AthenaX GF10 is a PCTG based filament plus 10% added glass 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 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 GF10 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

*The product- and technical data provided in this datasheet is correct to the best of FormFutura BV's knowledge and are intended for reference and comparison purposes only. Actual values may vary according to printing conditions, model complexity, environmental conditions, etcetera. Typical values are indicative only and are not to be construed as being binding specifications. All other information supplied, including that herein, is considered accurate but is furnished upon the express condition that the customer shall make its own assessment to determine a product's suitability for a particular purpose. We make no warranty, express or implied, including regarding any information supplied or the data upon which it is based or the results to be obtained from the use of such products or information, or concerning product, whether of satisfactory quality, merchantability, fitness for any particular purpose or otherwise, or with respect to intellectual property infringement as a result of use of information or products, and none shall be implied.*

