Last Updated: 2025-01-03

Technical Data Sheet

Filalab PA12 CF15

Product Information

Product Name	Filalab PA12 CF15
Chemical Name	Polyamide 12 reinforced with Carbon Fibers
Diameter	1.75 ± 0.05 mm
Manufacturer	Filalab, Vilnius, Lithuania

General Description

PA12 CF15 is a high-performance polyamide-based filament reinforced with 15% carbon fibers, designed for demanding engineering and industrial applications. The addition of carbon fibers enhances the material's mechanical properties, offering exceptional strength, rigidity, and dimensional stability while significantly reducing weight compared to unfilled PA12. This material is ideal for functional prototypes, tooling, and end-use parts requiring high thermal and chemical resistance, wear resistance, and structural integrity.

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Product Properties

Property	Test Method	Result
Specific Gravity	ISO 1183	1.05 g/cm3
CHARPY impact strength (sample 80x10x4 mm) Unnotched, as printed	ISO 179-1eU	55 kJ/m²
CHARPY impact strength (sample 80x10x4 mm) Notched, as printed	ISO 179-1eA	14 kJ/m²
Tensile elongation (speed 5 mm/min) At break, as printed	ISO 527 (1)	7 %
Tensile strength (speed 5 mm/min) At break, as printed	ISO 527 (1)	50 MPa
Elastic modulus Tensile (speed 1 mm/min), as printed	ISO 527 (1)	3650 MPa
Softening point: 50 N (heating rate 50°C/h), as printed	ISO 306	168 °C
Softening point: 0.45 MN/m², as printed	ISO 75	92 °C
Softening point: 1.81 MN/m², as printed	ISO 75	85 °C

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Recommended Printing Settings

Nozzle Temperature	260-300˚C (290˚C for Bambu Lab printers)
Bed Temperature	100˚C
Fan Speed	10-30%
Printing Speed	40-250 mm/s
Bed Type	Textured PEI Sheet, Smooth PEI Sheet*
Optional Adhesives for Build Plate	Bambu Lab Glue Stick, Magigoo
Filament Drying Recommendations	Temperature: 70-80˚C, Drying Time 6-12 hours

*Use a glue stick to prevent build plate damage.

Safety Information:

Filalab PA12 CF15 Filament is non-toxic and safe for general use. However, ensure proper ventilation during printing to avoid inhaling any fumes that may be produced. Always consult the Safety Data Sheet (SDS) for more detailed safety guidelines.

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Storage, Handling, and Drying Process:

PA12 CF15 filament is hygroscopic, meaning it readily absorbs moisture from the air. Excessive moisture can lead to printing defects such as bubbling, poor surface finish, and reduced layer adhesion. To ensure optimal print quality, proper storage and drying of Filalab PETG Filament are essential.

Storage:

- **Environment:** Store in a cool, dry place away from direct sunlight and high humidity.
- **Sealing:** Keep the filament sealed in an airtight container with desiccant to prevent moisture absorption.
- **Desiccant Use:** Use silica gel packets or other desiccants inside the storage container to maintain low humidity levels.

Drying Process:

- **Drying Temperature:** 70-80°C (149-158°F)
- **Drying Duration:** 6-12 hours, depending on the level of moisture absorption
- **Drying Equipment:** Use a filament dryer, convection oven, or a food dehydrator with temperature control to remove moisture before printing.

After drying, immediately store the filament in an airtight container to prevent reabsorption of moisture during or between printing sessions.

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Features:

- **High Strength and Rigidity:** Carbon fiber reinforcement enhances mechanical properties.
- **Lightweight:** Reduced density for weight-sensitive applications.
- **Thermal Stability:** Operates effectively in elevated temperatures.
- **Dimensional Accuracy:** Minimal warping and excellent layer adhesion.
- **Chemical Resistance:** Durable against oils, greases, and industrial chemicals.
- **Abrasion Resistance:** Ideal for high-stress environments.

Pros and Cons:

Pros:

- Exceptional strength-to-weight ratio.
- Excellent thermal and chemical resistance.
- Minimal warping for large or complex prints.
- High wear and abrasion resistance.
- Suitable for functional and end-use parts.

Cons:

- Abrasive nature requires a hardened nozzle.
- Higher printing temperatures needed compared to standard materials.
- Requires proper storage to avoid moisture absorption.
- Limited flexibility compared to non-reinforced filaments.

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