# Jabil **PA 4535 CF** Filament

## Technical Data Sheet

## Product Description

PA 4535 CF is among the strongest PA6 co-polymer carbon fiber filaments available on the market, delivering increased strength and stiffness.

Typical applications for PA 4535 CF are aluminum replacement parts, housings that require tight printing dimensional tolerances, clips, brackets, retainers, covers, in addition to jigs, fixtures, and tooling.

## Advantages

PA 4535 CF has the highest carbon fiber loading available in the industry, providing 40% improvement in tensile strength, impact strength, Z strength and elongation at break, with the added benefit of being ESD safe.

Additionally, the combination of carbon fiber in the already extremely low-warp nylon results in extraordinarily flat prints.

## Storage and Use

PA 4535 CF is highly hygroscopic, meaning it will quickly absorb and retain moisture from the atmosphere, affecting visual quality and mechanical properties. For best results, print and store filament in a dry environment. If necessary, dry filament in an oven at up to 75 °C (165 °F) for 6 – 12 hours.

Due to its high stiffness, material feeding may be challenging near the end of the spool or when the filament is very dry. Pre-heating the filament or allowing the filament to absorb a small amount of moisture from the atmosphere will make it more workable.

> For the latest print profiles, search for Jabil Engineered Materials in the Cura Marketplace.
>
> For complete copies of the Print Settings and the Printing & Drying Guide, visit our PA 4535 CF Webpage.

## Properties

| Mechanical Properties - Dry as Printed[1] | | | |
|---|---|---|---|
| | Test Condition | Typical Value | Method |
| Tensile Modulus (MPa) | XY coupons, Ambient | 10600 | ASTM D638, Type I |
| Tensile Elongation at Break (%) | | 2.9 | |
| Ultimate Tensile Strength (MPa) | | 88.0 | |
| Flexural Modulus (MPa) | XY coupons, Ambient | 5420 | ASTM D790 |
| Flexural Strength (MPa) | | 118 | |
| Flexural Strain (%) | | 4.3 | |
| Izod Impact, Notched (J/m) | XY coupons, Ambient | 125 | ASTM D256 |
| Izod Impact, Un-notched (J/m) | XY coupons, Ambient | 525 | |

1. Testing conducted on bars printed at 270 °C and tested at <0.20 wt% moisture. Typical values are for reference only.

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| Mechanical Properties - Moisture Conditioned[2] | | | |
|---|---|---|---|
| | Test Condition | Typical Value | Method |
| Tensile Modulus (MPa) | XY coupons, Ambient | 4850 | ASTM D638, Type I |
| Tensile Elongation at Break (%) | | 7.7 | |
| Ultimate Tensile Strength (MPa) | | 55.6 | |
| Flexural Modulus (MPa) | XY coupons, Ambient | 2380 | ASTM D790 |
| Flexural Strength (MPa) | | 62 | |
| Flexural Strain (%) | | >5% | |
| Izod Impact, Notched (J/m) | XY coupons, Ambient | 193 | ASTM D256 |
| Izod Impact, Un-notched (J/m) | XY coupons, Ambient | 653 | |

2. Testing conducted on bars printed at 270 °C and conditioned for 14 days at 23 °C and 50 % RH. Typical values are for reference only.

| Thermal Properties | | | |
|---|---|---|---|
| | Test Condition | Typical Value | Method |
| Heat Deflection Temperature (°C) | 0.455 Mpa | 162 | DMA |
| Heat Deflection Temperature (°C) | 1.82 Mpa | 91 | DMA |
| Melt Temperature, Peak (°C) | 20°C/min ramp | 190 | DSC |

| Other Physical Properties | | | |
|---|---|---|---|
| | Test Condition | Typical Value | Method |
| Density (g/cm$^3$) | Ambient | 1.26 | ASTM D792 |

| Dimensional Properties | | | |
|---|---|---|---|
| | Test Condition | Typical Value | Method |
| Diameter: Mean, Indiv. Axis (mm) | In-line, 100% inspection | 1.75±0.05<br>2.85±0.05 | Laser Micrometer |