# PA12+CF

Technical Data Sheet

This product is a material developed based on PA12, adding 15% carbon fiber, which greatly enhances the strength, rigidity, toughness of nylon, can be used in many occasions to replace the metal; it is not only low water absorption, the size of the printed parts by the humidity and temperature is also lower; at the same time with lubrication and wear-resistant performance, making it suitable for printing gears; high temperature resistance, the continuous use of parts temperature up to 120 High temperature resistance, the continuous use temperature of the parts can reach 120℃, short-term use temperature can reach 160℃; low shrinkage, printing is not easy to warping and cracking, the surface of the printed items matte and delicate.

| Material Status | Mass Production | | | |
|---|---|---|---|---|
| Characteristics | • Low moisture absorption<br>• High strength<br>• Chemical resistance,heat resistance and abrasion resistance | • High dimensional stability<br>• Matte surface effect<br>• Antistatic | • High dimensional stability | |
| Applications | • Aerospace<br>• Automotive | • Mechanical<br>• Chemical | • Robotics<br>• Drones | • Textile |
| Form | • Filament | | | |
| Processing method | • 3D Print, FDM Print | | | |

| | testing method | Typical value | |
|---|---|---|---|
| **Physical Properties** | | | |
| Density | GB/T 1033 | 1.07 | $g/cm^3$ |
| Melt Flow Index | GB/T 3682 | 2.8 | (230℃/10KG) |
| **Mechanical Properties** | | | |
| Tensile Strength(Z) | GB/T 1040 | 38.2 | MPa |
| Elongation at Break(Z) | GB/T 1040 | 18.2 | % |
| Flexural Strength(X-Y) | GB/T 9341 | 64.1 | MPa |
| Flexural Modulus(X-Y) | GB/T 9341 | 2092.3 | MPa |
| IZOD Impact Strength(X-Y) | GB/T 1843 | 7 | $kJ/m^2$ |
| **Thermal Properties** | | | |
| Heat distortion Temperature | GB/T 1634 | 131.9 ℃ | (0.45Mpa) |
| Continuous Service Temperature | IEC 60216 | N/A | |
| Maximum (short term) Use Temperature | | N/A | |
| **Electrical Properties** | | | |
| Insulation Resistance | DIN IEC 60167 | N/A | |
| Surface Resistance | DIN IEC 60093 | N/A | |

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## Recommended printing parameters

| | |
|---|---|
| Extruder Temperature | 250 - 290°C |
| Build Platform Temperature | 60°C |
| Fan Speed | 10-20% |
| Printing Speed | 0-200mm/s |

Based on Bambu P1S 0.4 mm nozzle and Orcaslicer2.1.0 Beta. Printing conditions may vary with different

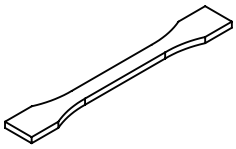
## nozzle diameters Drying Recommendations

N/A

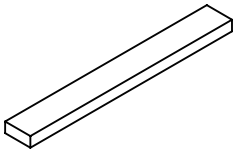
## Precautions:

When slicing, it is best to turn on the Z seam alignment and starting point alignment functions, turn off the Z-axis lift and exit, avoid passing through the shell when idling, optimize the slicing printing path, and appropriately reduce the printing speed to achieve the best printing effect.

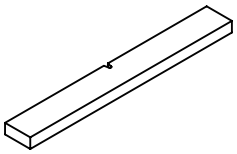
## Mechanical Properties



Tensile testing specimen GB/T 1040



Flexural testing specimen GB/T 9341



Impact testing specimen GB/T 1043

The physical properties, mechanical properties, thermal properties, and electrical properties of the filament are obtained based on the injection molding spline test.

### Print test condition:

| | |
|---|---|
| Extruder Temperature | 290°C |
| Build Platform Temperature | 100°C |
| Outline/Perimeter Shells | 2 |
| Top/Bottom Layers | 3 |
| Infill Percentage | 100% |
| Fan speed | 10% |
| Maximum volumetric flow rate | 4mm³/s |

Based on Bambu P1S 0.4 mm nozzle and Orcaslicer2.1.0 Beta.

## Notice

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