Chemical Specifications

PA6CF10 Filaments

PA6CF10 is an FFF 3D printing consumable produced with a polycaprolactam modified material containing 10% carbon fiber. PA6CF10 has excellent dimensional stability and strength, very good rigidity, and can be used on FFF3D printers in non-heated chambers. It has excellent tensile and flexural strength and can be used continuously for long periods of time at ambient temperatures up to 180°C.

MainFeatures:

Dimensionally stable/high strength/high stiffness/temperature resistance.

The Main Parameters:

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| --- | --- | --- | --- |
| Physical properties | Testing method | Unit | Typical value |
| Density | ISO 1183 | g/cm3 | 1.20~1.23 |
| Melt index MFR(250℃/2.16Kg) | ISO 1133 | g/10min | 3~6 |
| Water absorption (23℃/24h) | ISO 62 | % | ＜1 |
| Mechanical behavior | | | |
| Tensile strength（X-Y） | ISO 527 | Mpa | 63~67 |
| Elongation at break（X-Y） | ISO 527 | % | 16.5~17.5 |
| Elastic modulus（X-Y） | ISO 527 | Mpa | 4300~4800 |
| Bending strength（X-Y） | ISO178 | Mpa | 140~145 |
| Notched impact strength（X-Y） | ISO180 | KJ/m2 | 11.5~13.5 |
| Thermodynamic properties | | | |
| HDT@ 0.455 MPa(66 psi) | ISO75 | ℃ | 200 |
| Continuous use temperature | IEC 60216 | ℃ | 180 |

Test Spline Printing Conditions：

|  |  |
| --- | --- |
| Test Equipment | Guider IIS （Flashforge technology） |
| Nozzle diameter | 0.4mm |
| Nozzle temperature | 285 °C |
| Printing speed | 50mm/s |
| Wall thickness | 1.2mm |
| Filling | 100% |
| Standard spline | The specific dimensions are as in appendix 1 |

Recommended Printing Parameters:

|  |  |
| --- | --- |
| Parameter |  |
| Nozzle temperature | 270~300℃(Recommended 285℃) |
| Print platform temperature | 90~120℃(Recommended 100℃) |
| Printing platform materials | Tempered glass，BuildTak，carbon fiber board |
| Nozzle diameter | φ0.4/0.6mm(Recommendedφ0.4mm) |
| Nozzle and feed gear material | High strength steel |
| Model cooling fan | Closure |
| Layer thickness | 0.18~0.3mm |
| Printing speed | 40~60mm/s(Recommended 50mm/s) |
| Idle speed | 60~120mm/s |
| Printing ambient temperature | Room temperature ~65℃ |
| Withdrawal strength | 2~4mm |
| Withdrawal speed | 30~50mm/s |
| Support material | Self supporting |

Precautions：

To prevent moisture absorption and contamination, the packaging of filaments should be kept airtight and undamaged until they are opened for use. For the same reason, some used filaments should be resealed before storage.

If filaments deteriorate due to moisture absorption, they should be dried before use. It is recommended to dry the filaments in a hot air oven at 80°C for at least 12 hours to ensure the success rate and quality of the printed model.

If using PA6CF10 as its own support material, remove the support structure after the model has cooled. Otherwise, the support structure may be glued to the model and difficult to remove. .

After the model is printed, it is recommended to dry it in an oven at 80~100°C for 1~3 hours to increase the strength of the model.

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Annex 1: Test spline size and printing orientation

