Chemical Specifications

PA12-CF filaments

PA12-CF is a FFF 3Dprinting supplies is produced using LUVOCOM® 3F PAHT CF 9891 BK as the main raw material. PA12-CF is a long-chain polyimide modified material containing 15% carbon fiber, which has low moisture absorption and low shrinkage, and can be used on FFF3D printers in non-heated chambers. It has excellent tensile and impact strength and can be used continuously for long periods of time at temperatures up to 150°C while maintaining 50% of its mechanical properties.

Main features：

High stiffness / high strength / no warpage / temperature resistance

The main parameters:

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| --- | --- | --- | --- |
| Physical properties | Testing method | Unit | Typical value |
| Density | ISO 1183 | g/cm3 | 1.23~1.26 |
| Melt index MFR(250℃/2.16Kg) | ISO 1133 | g/10min | 3~6 |
| Water absorbtion (23℃/24h) | ISO 62 | % | ＜0.3 |
| Mechanical behavior | | | |
| Tensile strength | ISO 527 | Mpa | 50~55 |
| Elongation at break | ISO 527 | % | 3.5~4.5 |
| Elastic Modulus | ISO 527 | Mpa | 1300~1500 |
| Bending strength | ISO178 | Mpa | 90~96 |
| Notch impact strength | ISO180 | KJ/m2 | 3.5~5 |
| Thermodynamic properties | | | |
| HDT@ 0.455 MPa(66 psi) | ISO75 | ℃ | 90 |
| Continuous use temperature | IEC 60216 | ℃ | 120 |
| Operating temperature（Service life up to 200 hours） | | ℃ | 160 |
| Electrical characteristics | | | |
| Insulation resistance (strip electrode) | IEC 60167 | Ω | ≤10² |
| Surface resistance | IEC 60093 | Ω | ≤10² |

Test Spline Printing Conditions：

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| --- | --- |
| Test Equipment | Guider IIS （Flashforge Technology） |
| Nozzle diameter | 0.6mm |
| Nozzle temperature | 275 °C |
| Printing speed | 50mm/s |
| Wall thickness | 1.8mm |
| Filling | 100% |
| Standard spline | The specific dimensions are as in appendix 1 |

Recommended Printing Parameters:

|  |  |
| --- | --- |
| Parameter |  |
| Nozzle temperature | 260~280℃(Recommend 270℃) |
| Print platform temperature | 60~90℃(Recommend 80℃) |
| Printing platform material | Tempered glass, BuildTak，Carbon fiber board |
| Nozzle diameter | φ0.4/0.6mm(Recommendφ0.6mm) |
| Nozzle and feed gear material | High strength steel |
| Model cooling fan | Closure |
| Layer thickness | 0.12~0.3mm |
| Printing speed | 40~60mm/s(Recommend 50mm/s) |
| Idle speed | 60~120mm/s |
| Printing ambient temperature | Room temperature ~50℃ |
| Withdrawal strength | 4~6mm |
| Withdrawal speed | 40~60mm/s |
| Support material | PVA,PVOH,BVOH |

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 PA12-CF 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 operations