Chemical Specifications

PLACF10 Filaments

PLACF10 is an FFF 3D printing filaments produced with a polylactic acid modified material containing 10% carbon fiber. PLACF10 has excellent dimensional stability, flexural strength and rigidity, and is as easy to print as PLA filament.

Main Features：

Dimensionally stable/high strength/high stiffness.

The Main Parameters:

|  |  |  |  |
| --- | --- | --- | --- |
| Physical properties | Testing method | Unit | Typical value |
| Density | ISO 1183 | g/cm3 | 1.26~1.27 |
| Melt index MFR(190℃/2.16Kg) | ISO 1133 | g/10min | 10~15 |
| Water absorption(23℃/24h) | ISO 62 | % | ＜0.5 |
| Mechanical behavior | | | |
| Tensile strength（X-Y） | ISO 527 | Mpa | 40~45 |
| Elongation at break（X-Y） | ISO 527 | % | 11.5~13.5 |
| Elastic modulus（X-Y） | ISO 527 | Mpa | 1100~1300 |
| Bending strength（X-Y） | ISO178 | Mpa | 85~95 |
| Notched impact strength（X-Y） | ISO180 | KJ/m2 | 8.5~9.5 |
| Thermodynamic properties | | | |
| HDT@ 0.455 MPa(66 psi) | ISO75 | ℃ | 60 |
| Continuous use temperature | IEC 60216 | ℃ | 55 |

Test Spline Printing Conditions：

|  |  |
| --- | --- |
| Test equipment | Guider IIS （Flashforge technology） |
| Nozzle diameter | 0.4mm |
| Nozzle temperature | 210 °C |
| Printing speed | 60mm/s |
| Wall thickness | 1.2mm |
| Filling | 100% |
| Standard spline | The specific dimensions are as in appendix 1 |

Recommended Printing Parameters:

|  |  |
| --- | --- |
| Parameter |  |
| Nozzle temperature | 200~230℃(Recommended 210℃) |
| Print platform temperature | 30~60℃(Recommended 50℃) |
| 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 | 50~100% |
| Layer thickness | 0.12~0.3mm |
| Printing speed | 40~60mm/s(Recommended 50mm/s) |
| Idle speed | 60~120mm/s |
| Printing ambient temperature | Room temperature ~40℃ |
| Withdrawal length | 1~2mm |
| Withdrawal speed | 30~50mm/s |
| Support materials | Self supporting,PVA,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.

Because of the addition of carbon fiber, PLACF10 filament is easier to absorb moisture than PLA filament, and it should be dried before use. It is recommended to dry the filaments in a hot air oven at 60°C for at least 5 hours to ensure the success rate and quality of the printed model.

After the model is printed, it is recommended to dry it in an oven at 60 °C for 1~3 hours to increase the strength of the model.

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Annex 1: Test spline size and printing orientation

