Chemical Specifications

PLA Filaments

PLA is an FFF 3D printing filament produced with a reinforced and toughened polylactic acid modified material. PLA has excellent dimensional stability, bending strength and rigidity, no warping, no cracking, easy printing, and is generally applicable to different FFF3D printers.

Main Features：

Easy to print / dimensionally stable / high stiffness

The Main Parameters:

|  |  |  |  |
| --- | --- | --- | --- |
| Physical properties | Testing method | Unit | Typical value |
| Density | ISO 1183 | g/cm3 | 1.25~1.26 |
| Melt index MFR(190℃/2.16Kg) | ISO 1133 | g/10min | 4~8 |
| Water absorption(23℃/24h) | ISO 62 | % | ＜0.3 |
| Mechanical behavior | | | |
| Tensile strength（X-Y） | ISO 527 | Mpa | 45~49 |
| Elongation at break（X-Y） | ISO 527 | % | 13.5~15.5 |
| Elastic modulus（X-Y） | ISO 527 | Mpa | 1000~1100 |
| Bending strength（X-Y） | ISO178 | Mpa | 69~75 |
| Notched impact strength（X-Y） | ISO180 | KJ/m2 | 4.5~5 |
| Thermodynamic properties | | | |
| HDT@ 0.455 MPa(66 psi) | ISO75 | ℃ | 53 |
| Continuous use temperature | IEC 60216 | ℃ | 50 |

Test Spline Printing Condition：

|  |  |
| --- | --- |
| 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 | 190~220℃(Recommended 210℃) |
| Print platform temperature | Room temperature~60℃(Recommended40℃) |
| Printing platform material | Tempered glass，BuildTak，carbon fiber board |
| Nozzle diameter | φ0.4/0.6mm(Recommendedφ0.4mm) |
| Model cooling fan | 50~100% |
| Layer thickness | 0.12~0.3mm |
| Printing speed | 60~90mm/s(推荐60mm/s) |
| Idle speed | 60~120mm/s |
| Printing ambient temperature | Room temperature ~40℃ |
| Withdrawal strength | 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.

PLA is a biodegradable material. Moisture and oxygen in the air and ultraviolet rays will accelerate the aging of the material. In order not to affect the final printing quality, the PLA filaments after opening need to be used up as soon as possible.

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Annex 1: Test spline size and printing orientation

