

Technical Data Sheet

Ultrafuse PLA

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Version No.: 4.3

General information

Components

Polylactic acid based filament for Fused Filament Fabrication.

Product Description

PLA is one of the most used materials for 3D printing. Ultrafuse PLA is available in a wide range of colors. The glossy feel often attracts those who print display models or items for household use. Many appreciate the plant-based origin of this material. When properly cooled, PLA has a high maximum printing speed and sharp printed corners. Combining this with low warping of the print makes it a popular plastic for home printers, hobbyists, prototyping and schools.

Delivery form and warehousing

Ultrafuse PLA filament should be stored at 15 - 25°C in its originally sealed package in a clean and dry environment. If the recommended storage conditions are observed the products will have a minimum shelf life of 12 months.

Product safety

Recommended: Process materials in a well ventilated room, or use professional extraction systems. For further and more detailed information please consult the corresponding material safety data sheets.

Notice

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

Recommended 3D-Print processing parameters

| | |
|---------------------------|-----------------------------|
| Nozzle Temperature | 210 – 230 °C / 410 – 446 °F |
| Build Chamber Temperature | - |
| Bed Temperature | 50 – 70 °C / 122 – 158 °F |
| Bed Material | Glass |
| Nozzle Diameter | ≥ 0.4 mm |
| Print Speed | 40 - 80 mm/s |

Drying Recommendations

| | |
|---|---|
| Drying recommendations to ensure printability | 60 °C in a hot air dryer or vacuum oven for 4 to 16 hours |
|---|---|

Please note: To ensure constant material properties the material should always be kept dry.

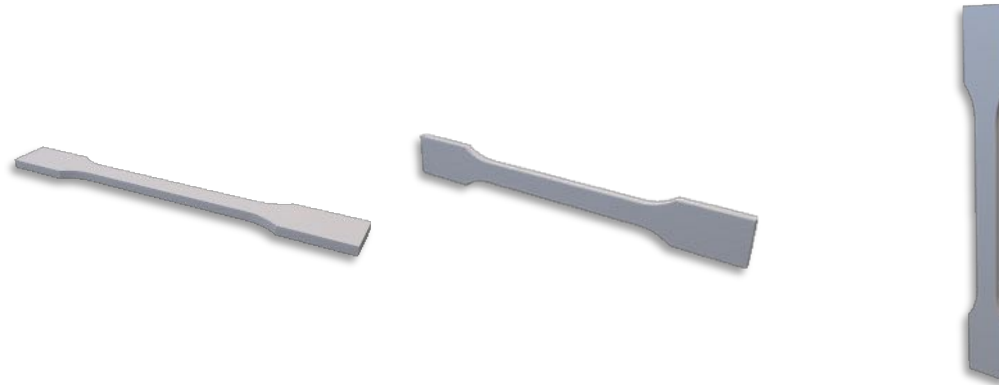
General Properties

| | | Standard |
|----------------------|--|------------|
| Printed Part Density | 1248 kg/m ³ / 77.9 lb/ft ³ | ISO 1183-1 |

Thermal Properties

| | | Standard |
|------------------------------|--|-------------|
| HDT at 1.8 MPa | 55 °C / 131 °F | ISO 75-2 |
| HDT at 0.45 MPa | 65 °C / 149 °F | ISO 75-2 |
| Glass Transition Temperature | 61 °C / 142 °F | ISO 11357-2 |
| Melting Temperature | 151 °C / 304 °F | ISO 11357-3 |
| Melt Volume Rate | 21.2 cm ³ /10 min / 1.29 in ³ /10 min (220 °C, 5 kg) | ISO 1133 |

Mechanical Properties



| Print direction | Standard | XY Flat | XZ On its edge | ZX Upright |
|------------------------------------|-----------|------------------------|------------------------|-----------------------|
| Tensile strength | ISO 527 | 34.7 MPa / 5.0 ksi | - | 21.2 MPa / 3.1 ksi |
| Elongation at Break | ISO 527 | 4.2 % | - | 1.2 % |
| Young's Modulus | ISO 527 | 2308 MPa / 335 ksi | - | 2131 MPa / 309 ksi |
| Flexural Strength | ISO 178 | 98.0 MPa / 14.2 ksi | 105 MPa / 15.2 ksi | 54.9 MPa / 8.0 ksi |
| Flexural Modulus | ISO 178 | 1860 MPa / 270 ksi | 1708 MPa / 247 ksi | 1715 MPa / 249 ksi |
| Flexural Strain at Break | ISO 178 | 4.8 % | 4.2 % | 1.9 % |
| Impact Strength Charpy (notched) | ISO 179-2 | 2.5 kJ/m ² | 1.9 kJ/m ² | 1.7 kJ/m ² |
| Impact Strength Charpy (unnotched) | ISO 179-2 | 13.2 kJ/m ² | 14.3 kJ/m ² | 4.3 kJ/m ² |
| Impact Strength Izod (notched) | ISO 180 | 3.3 kJ/m ² | 2.1 kJ/m ² | 1.6 kJ/m ² |
| Impact Strength Izod (unnotched) | ISO 180 | 11.0 kJ/m ² | 9.6 kJ/m ² | 4.7 kJ/m ² |