

# Technical Data Sheet

# Ultrafuse PLA

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## 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	PLA is in a printable condition, drying is not necessary
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### General Properties

Standard

Printed Part Density	1248 kg/m <sup>3</sup> / 77.9 lb/ft <sup>3</sup>	ISO 1183-1
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### 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 <sup>3</sup> /10 min / 1.29 in <sup>3</sup> /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 <sup>2</sup>	1.9 kJ/m <sup>2</sup>	1.7 kJ/m <sup>2</sup>
Impact Strength Charpy (unnotched)	ISO 179-2	13.2 kJ/m <sup>2</sup>	14.3 kJ/m <sup>2</sup>	4.3 kJ/m <sup>2</sup>
Impact Strength Izod (notched)	ISO 180	3.3 kJ/m <sup>2</sup>	2.1 kJ/m <sup>2</sup>	1.6 kJ/m <sup>2</sup>
Impact Strength Izod (unnotched)	ISO 180	11.0 kJ/m <sup>2</sup>	9.6 kJ/m <sup>2</sup>	4.7 kJ/m <sup>2</sup>