

Technical data sheet PLA

Ultimaker

Chemical Name	Polylactic acid
Description	Ultimaker PLA filament provides a no-hassle 3D printing experience thanks to its reliability and good surface quality. Our PLA is made from organic and renewable sources. It's safe, easy to print with and it serves a wide range of applications for both novice and advanced users.
Key features	Good tensile strength and surface quality, easy to work with at high print speeds, user-friendly for both home and office environments, PLA allows the creation of high-resolution parts. There is a wide range of color options available.
Applications	Household tools, toys, educational projects, show objects, prototyping, architectural models, as well as lost casting methods to create metal parts.
Non suitable for	Food contact and in-vivo applications. Long term outdoor usage or applications where the printed part is exposed to temperatures higher than 50 °C.

Filament specifications

	<u>Value</u>	<u>Method</u>
Diameter	2.85±0.10 mm	-
Max roundness deviation	0.10 mm	-
Net filament weight	750 g	-

Color information

<u>Color</u>	<u>Color code</u>
PLA Green	RAL 6018
PLA Black	RAL 9005
PLA Silver Metallic	RAL 9006
PLA White	RAL 9010
PLA Transparent	n/a
PLA Orange	RAL 2008
PLA Blue	RAL 5002
PLA Magenta	RAL 4010
PLA Red	RAL 3020
PLA Yellow	RAL 1003
PLA Pearl White	RAL 1013

Mechanical properties (*)

Injection molding

3D printing

	Typical value	Test method	Typical value	Test method
Tensile modulus	-	-	2346.5 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	-	-	49.5 MPa	ISO 527 (50 mm/min)
Tensile stress at break	-	-	45.6 MPa	ISO 527 (50 mm/min)
Elongation at yield	-	-	3.3 %	ISO 527 (50 mm/min)
Elongation at break	-	-	5.2 %	ISO 527 (50 mm/min)
Flexural strength	-	-	103.0 MPa	ISO 178
Flexural modulus	-	-	3150.0 MPa	ISO 178
Izod impact strength, notched (at 23°C)	-	-	5.1 kJ/m ²	ISO 180
Charpy impact strength (at 23°C)	-	-	-	-
Hardness	-	-	-	-

Thermal properties

Typical value

Test method

Melt mass-flow rate (MFR)	6.09 g/10min	ISO 1133 (210 °C, 2.16 kg)
Heat deflection (HDT) at 0.455 MPa	-	-
Heat deflection (HDT) at 1.82 MPa	-	-
Glass transition	~60 °C	ISO 11357
Coefficient of thermal expansion (flow)	-	-
Coefficient of thermal expansion (xflow)	-	-
Melting temperature	145-160 °C	ISO 11357
Thermal shrinkage	-	-

Other properties

Typical value

Test method

Specific gravity	1.24	ASTM D1505
Flame classification	-	-

(*) See notes.

Notes

Properties reported here are average of a typical batch. The 3D printed test specimens were printed in the XY plane, using the normal quality profile in Cura 2.1, an UM2+, a 0.4mm nozzle, 90% infill, 210 °C nozzle temperature and 60 °C build plate temperature. The values are the average of 5 white and 5 black tensile bars. Ultimaker is constantly working on extending the TDS data.

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Version

Version 3.006

Date

28/02/2017

Ultimaker

Item Code	Filament	Colour
1621	ABS - M2560 Black 750 - 206127	Black
1624	ABS - M2560 Blue 750 - 206127	Blue
1630	ABS - M2560 Grey 750 - 206127	Grey
1627	ABS - M2560 Green 750 - 206127	Green
1628	ABS - M2560 Orange 750 - 206127	Orange
1626	ABS - M2560 Pearl Gold 750 - 206127	Pearl Gold
1623	ABS - M2560 Red 750 - 206127	Red
1625	ABS - M2560 Silver 750 - 206127	Silver
1622	ABS - M2560 White 750 - 206127	White
1629	ABS - M2560 Yellow 750 - 206127	Yellow
1631	CPE - M0188 Black 750 - 201273	Black
1636	CPE - M0188 Blue 750 - 201273	Blue
1634	CPE - M0188 Dark Grey 750 - 201273	Dark Grey
1638	CPE - M0188 Green 750 - 201273	Green
1633	CPE - M0188 Light Grey 750 - 201273	Light Grey
1635	CPE - M0188 Red 750 - 201273	Red
1639	CPE - M0188 Transparent 750 - 201273	Transparent
1632	CPE - M0188 White 750 - 201273	White
1637	CPE - M0188 Yellow 750 - 201273	Yellow
1646	PAX - M2085 Black 750 215158	Black
1647	PAX - M2085 Transparent 750 - 215158	Transparent
1609	PLA - M0751 Black 750 - 211399	Black
1616	PLA - M0751 Blue 750 - 211399	Blue
1608	PLA - M0751 Green 750 - 211399	Green
1620	PLA - M0751 Pearl White 750 - 211399	Pearl White
1618	PLA - M0751 Red 750 - 211399	Red
1612	PLA - M0751 Silver Metallic 750 - 211399	Silver Metallic
1614	PLA - M0751 Transparent 750 - 211399	Transparent
1613	PLA - M0751 White 750 - 211399	White
1619	PLA - M0751 Yellow 750 - 211399	Yellow
9023	PLA - M0751 Magenta 750 - 211399	Magenta
9021	PLA - M0751 Magenta 750 - 211399	Orange
9732	PVA - M0952 Natural 350 - 206127	Natural
9731	PVA - M0952 Natural 750 - 206127	Natural

9715	PCA - Transparent 750 - 212674	Transparent
9716	PCA - Black 750 - 212674	Black
9717	PCA - White 750 - 212674	White
9720	TPU - White 750 - 215194	White
9725	CPE-TR - Transparent 700 - 210592	Transparent
9726	CPE-TR - Black 700 - 210592	Black
9727	CPE-TR White 700 - 210592	White