

Technical data sheet CPE

Ultimaker

Chemical Name	Copolyester
Description	CPE is chemical resistant, strong, tough and demonstrate good dimensional stability. CPE is available in a wide range of colors to choose from, including gray scale for more professional looking models.
Key features	Excellent chemical resistance, toughness and dimensional stability, good interlayer adhesion (especially when using the front door add-on), and low levels of ultrafine particles (UFPs) and volatile organic compounds (VOCs).
Applications	Visual and functional prototyping and short run manufacturing.
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 70 °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>
CPE Black	RAL 9017 (est.)
CPE White	RAL 9010 (est.)
CPE Light Gray	RAL 7035
CPE Dark Gray	RAL 7043
CPE Red	RAL 3028 (est.)
CPE Blue	RAL 5012 (est.)
CPE Yellow	RAL 1021 (est.)
CPE Green	Pantone 368C (est.)
CPE Transparent	n/a

Mechanical properties (*)

	<u>Injection molding</u>		<u>3D printing</u>	
	Typical value	Test method	Typical value	Test method
Tensile modulus	1900 MPa	ASTM D638	1537.5 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	50 MPa	ASTM D638	41.1 MPa	ISO 527 (50 mm/min)
Tensile stress at break	28 MPa	ASTM D638	37.7 MPa	ISO 527 (50 mm/min)
Elongation at yield	5 %	ASTM D638	4.7 %	ISO 527 (50 mm/min)
Elongation at break	100 %	ASTM D638	5.1 %	ISO 527 (50 mm/min)
Flexural strength	-	-	79.5 MPa	ISO 178
Flexural modulus	2100 MPa	ASTM D790	1990.0 MPa	ISO 178
Izod impact strength, notched (at 23°C)	95 J/m	ASTM D256	4.0 kJ/m ²	ISO 180
Charpy impact strength (at 23°C)	-	-	-	-
Hardness	108 (Rockwell)	ASTM D785	-	-

Thermal properties

	<u>Typical value</u>	<u>Test method</u>
Melt mass-flow rate (MFR)	13.2 g/10min	ISO 1133 (240 °C, 2.16 kg)
Heat deflection (HDT) at 0.455 MPa	70 °C	ASTM D648
Heat deflection (HDT) at 1.82 MPa	62 °C	ASTM D648
Glass transition	~ 82 °C	DSC
Coefficient of thermal expansion (flow)	7·10 ⁻⁵ mm/mm °C	ASTM E693
Coefficient of thermal expansion (xflow)	-	-
Melting temperature	Not relevant (amorphous)	
Thermal shrinkage	-	-

Other properties

	<u>Typical value</u>	<u>Test method</u>
Specific gravity	1.27	ASTM D792
Flame classification	Not tested (typically HB when molded)	-

(*) 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 0.4 mm nozzle, 90% infill, 250 °C nozzle temperature and 70 °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 3.005

Date

28/02/2017

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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