

Technical data sheet CPE+

Ultimaker

Chemical composition

See CPE+ safety data sheet, section 3

Description

CPE+ is chemical and temperature resistant, tough, and demonstrates good dimensional stability. CPE+ shows higher temperature resistance and increased impact strength than regular CPE

Key features

Excellent chemical resistance, temperature resistance, toughness, and dimensional stability. Good interlayer adhesion (especially when using the front enclosure add-on). Good bed adhesion (especially when using the adhesion sheets). And low levels of ultrafine particles (UFPs) and volatile organic compounds (VOCs). Allows printing of translucent parts with the transparent filament option

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 100 °C

Filament specifications

	Value	Method
Diameter	2.85 ± 0.10 mm	-
Max roundness deviation	0.10 mm	-
Net filament weight	700 g	-
Filament length	~ 93 m	-

Color information

Color	Color code
CPE+ Transparent	N/A
CPE+ Black	RAL 9005
CPE+ White	RAL 9010 (est.)

Mechanical properties*

	Injection molding		3D printing	
	Typical value	Test method	Typical value	Test method
Tensile modulus	1,575 MPa	ASTM D638	1,128.5 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	43 MPa	ASTM D638	35.2 MPa	ISO 527 (50 mm/min)
Tensile stress at break	52 MPa	ASTM D638	33 MPa	ISO 527 (50 mm/min)
Elongation at yield	7%	ASTM D638	6%	ISO 527 (50 mm/min)
Elongation at break	210%	ASTM D638	6.6%	ISO 527 (50 mm/min)
Flexural strength	64 MPa	ASTM D790	65 MPa	ISO 178
Flexural modulus	1,575 MPa	ASTM D790	1,555 MPa	ISO 178
Izod impact strength, notched (at 23 °C)	860 J/m	ASTM D256	6.2 kJ/m ²	ISO 180
Charpy impact strength (at 23 °C)	-	-	-	
Hardness	111 (Rockwell)	ASTM D785	75 (Shore D)	Durometer

Electrical properties*

	Typical value	Test method	Typical value	Test method
Dissipation factor (at 1 MHz)	-	-	0.015	ASTM D150-11
Dielectric constant (at 1 MHz)	-	-	2.77	ASTM D150-11

Thermal properties

	Typical value	Test method
Melt mass-flow rate (MFR)	8.5 g/10 min	ISO 1133 (260 °C, 1.2 kg)
Heat detection (at 0.455 MPa)	94 °C	ASTM D648
Heat deflection (at 1.82 MPa)	81 °C	ASTM D648
Vicat softening temperature	-	-
Glass transition	-	-
Coefficient of thermal expansion	-	-
Melting temperature	-	-
Thermal shrinkage	-	-

*See notes

Other properties

	Value	Test method
Specific gravity	1.18	ASTM D792
Flame classification	-	-

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 Ultimaker Cura 2.1, an Ultimaker 2+, a 0.4 mm nozzle, 90% infill, 260 °C nozzle temperature, and 110 °C build plate temperature. The values are the average of five natural, five white, and five black specimens for the tensile, flexural, and impact tests. The Shore hardness D was measured in a 7-mm-thick square using the normal quality profile in Ultimaker Cura 2.5, an Ultimaker 3, a 0.4 mm print core, and 100% infill. The electrical properties were measured on a 54-mm-diameter disk with 3 mm thickness printed in the XY plane, using the fine quality profile (0.1 mm layer height) in Ultimaker Cura 3.2.1, an Ultimaker 3, a 0.4 mm print core, and 100% infill. Ultimaker is constantly working on extending the TDS data.

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