Technical data sheet PC

Ultimaker

Chemical Name	Polycarbonate
Description	With Ultimaker PC filament, you can print strong and tough parts that retain dimensional stability when subjected to temperatures as high as 110 ˚C. Our PC is engineered to be printed at moderate temperatures compared to other PC filaments and shows minimized warping providing a seamless 3D printing experience.
Key features	High toughness (especially for the non-transparent filament options), temperature resistance, flame retardant characteristics, dimensionally stable, strong interlayer bonding (especially when using the front door add-on), good bed adhesion (especially when using the Avery stickers). Allows printing of translucent parts with the transparent filament option.
Applications	Lighting, molds, engineering parts, tools, functional prototyping and short run manufacturing.
Non suitable for	Food contact and in-vivo applications. Applications where the printed part is exposed to temperatures higher than 110 ˚C.

Filament specifications	Value	Method
Diameter	2.85±0.05 mm	Ultra-fast CCS-based, dual-axis diameter gauge
Max roundness deviation	0.05 mm	Ultra-fast CCS-based, dual-axis diameter gauge
Net filament weight	750 g	-

Color information	Color	Color code
	PC Transparent	n/a
	PC Black	RAL 9005
	PC White	RAL 9003

Mechanical properties (*)(**)	Injection molding		3D printing	
	Typical value	**Test method**	**Typical value**	**Test method**
Tensile modulus	-	-	2307 MPa (t) 2048 MPa (b/w)	ASTM D638
Tensile stress at yield	-	-	-	-
Tensile stress at break	-	-	62.7 MPa (t) 59.7 MPa (b/w)	ASTM D638
Elongation at yield	-	-	-	-
Elongation at break	-	-	3.15% (t) 12.24% (b/w)	ASTM D638
Flexural strength	-	-	100.4 MPa (t) 94.1 MPa (b/w)	ASTM D790
Flexural modulus	-	-	2477 MPa (t) 2044 MPa (b/w)	ASTM D790
Izod impact strength, notched (at 23˚C)	-	-	-	-
Charpy impact strength (at 23˚C)	-	-	3.41 kJ/m² (t) 25.1 kJ/m² (b/w)	ASTM D256
Hardness	-	-	-	-

Thermal properties	Typical value	Test method
Melt mass-flow rate (MFR)	32 - 35 g/10 min (t) 23 - 26 g/10 min (b/w)	(300 ˚C, 1.2 kg)
Heat deflection (HDT) at 0.455 MPa	-	-
Heat deflection (HDT) at 1.82 MPa	-	-
Glass transition	112 - 113 ˚C	DSC, 10 ˚C/min
Coefficient of thermal expansion (flow)	-	-
Coefficient of thermal expansion (xflow)	-	-
Melting temperature	-	-
Thermal shrinkage	-	-

Other properties	Typical value	Test method
Specific gravity	1.18 -1.20	ASTM D792
Flame classification	preliminary tested*	-

(*) See notes.
(**) t: transparent. b/w: black/white.

Notes

Properties reported here are average of a typical batch. The mechanical properties are from specimens printed flat at 100% infill under 45°, 2 shells, 0% fan speed, middle of the bed, nozzle temperature 255 °C, bed temperature 80 °C, BuildTak sheet on the bed, nozzle diameter 0.4 mm, all print speeds are 60 mm/s, and layer height 0.2 mm. Ultimaker is constantly working on extending the TDS data.

Ultimaker PC could pass V-2 (VL94) at thickness > 1 mm when printed with 100% infill.
Lower infill may lead to reduced flame retardancy performance.

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