

Technical data sheet ABS

Ultimaker

Chemical composition	See ABS safety data sheet, section 3
Description	Used by an array of industries worldwide, ABS is known for its exceptional mechanical properties. Ultimaker ABS is specifically formulated to minimize warping and ensure consistent interlayer adhesion
Key features	Excellent mechanical properties and interlayer adhesion (especially when using the front enclosure add-on), superior aesthetics, minimal warping, and reliable bed adhesion
Applications	Visual and functional prototyping, and short-run manufacturing
Non-suitable for	Food contact and <i>in vivo</i> applications. Long term UV exposure can negatively affect properties of an ABS print. Applications where the printed part is exposed to temperatures higher than 85 °C

Filament specifications

	Value	Method
Diameter	2.85 ± 0.10 mm	-
Max roundness deviation	0.10 mm	-
Net filament weight	750 g	-
Filament length	~ 107 m	-

Color information

Color	Color code
ABS Black	RAL 9017
ABS White	RAL 9003
ABS Red	RAL 3020
ABS Blue	RAL 5002
ABS Silver	RAL 9006
ABS Pearl Gold	RAL 1036
ABS Green	RAL 6018
ABS Orange	RAL 2008
ABS Yellow	RAL 1023
ABS Gray	RAL 7011

Mechanical properties*

	Injection molding		3D printing	
	Typical value	Test method	Typical value	Test method
Tensile modulus	2,030 MPa	ISO 527 (1 mm/min)	1,618.5 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	43.6 MPa	ISO 527 (50 mm/min)	39 MPa	ISO 527 (50 mm/min)
Tensile stress at break	-	-	33.9 MPa	ISO 527 (50 mm/min)
Elongation at yield	4.8%	ISO 527 (50 mm/min)	3.5%	ISO 527 (50 mm/min)
Elongation at break	34%	ISO 527 (50 mm/min)	4.8%	ISO 527 (50 mm/min)
Flexural strength	-	-	70.5 MPa	ISO 178
Flexural modulus	-	-	2,070 MPa	ISO 178
Izod impact strength, notched (at 23 °C)	-	-	10.5 kJ/m ²	ISO 180
Charpy impact strength (at 23 °C)	58 kJ/m ²	ISO 179	-	
Hardness	-	-	76 (Shore D)	Durometer

Electrical properties*

	Typical value	Test method	Typical value	Test method
Dissipation factor (at 1 MHz)	-	-	0.012	ASTM D150-11
Dielectric constant (at 1 MHz)	-	-	2.69	ASTM D150-11

Thermal properties

	Typical value	Test method
Melt mass-flow rate (MFR)	41 g/10 min	ISO 1133 (260 °C, 5 kg)
Heat detection (at 0.455 MPa)	-	-
Heat deflection (at 1.82 MPa)	-	-
Vicat softening temperature	97 °C	ISO 306
Glass transition	-	-
Coefficient of thermal expansion	-	-
Melting temperature	225 - 245 °C	ISO 294
Thermal shrinkage	-	-

*See notes

Other properties

	Value	Test method
Specific gravity	1.10	ISO 1183
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 fine quality profile in Ultimaker Cura 2.1, an Ultimaker 2+, a 0.4 mm nozzle, 90% infill, and 250 °C nozzle temperature. The values are the average of 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 in the XY plane, using the normal quality profile in 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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