Technical data sheet ABS

Ultimaker

Chemical name	Acrylonitrile butadiene styrene
Description	Used by an array of industries worldwide, ABS is known for its exceptional mechanical properties. Our 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), nice aesthetics, minimal warping and reliable bed adhesion.
Applications	Visual and functional prototyping and short run manufacturing.
Non-suitable for	Food contact and in-vivo 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	2030 MPa	ISO 527 (1 mm/min)	1681.5 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	43.6 MPa	ISO 527 (50 mm/min)	39.0 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	-	-	2070.0 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

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

Other properties	Typical value	Test method
Specific gravity	1.10	ISO 1183
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 Ultimaker 2+, a 0.4 mm nozzle, 90% infill, 250 ˚C nozzle temperature and 80 ˚C build plate temperature. The values are the average of 5 white and 5 black specimens for the tensile, flexural, and impact tests. The Shore hardness D was measured in a 7-mm-thick square printed 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. Ultimaker is constantly working on extending the TDS data.

Disclaimer

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