ASA vs. ABS

Offering a variety of production-grade thermoplastics, FDM® technology creates parts that are highly accurate, tough and suitable for both functional prototyping and end-use parts. ABS is the most common material used as it boasts good mechanical properties and high name recognition. Compared with ASA, ABS may be more familiar because of its popularity in mass production.

ASA is another popular all-purpose material for jigs and fixtures, manufacturing aids, prototyping and limited-run end-use parts. ASA matches or exceeds the mechanical properties of standard ABS and has greater heat resistance. Moreover, ASA demonstrates exceptional UV stability and, with its matte finish, offers the best aesthetics of any FDM thermoplastic. It's especially suited for end-use parts in outdoor commercial and infrastructure applications, and its wide array of color options surpasses that of ABS.

MATERIAL	ABS-M30™ [1]	ASA [2]
System Availability	F120™/F170™/F270™/F370™ F170CR/F370CR F770™ Fortus 360mc™ Fortus 380mc™ Fortus 400mc™ Fortus 450mc™ Fortus 900mc™/F900™	F120/F170/F270/F370 F170CR/F370CR F770 Fortus 360mc Fortus 380mc Fortus 380mc CFE Fortus 400mc Fortus 450mc Fortus 900mc/F900
Layer Thickness:		
0.020 inch (0.508 mm)		X
0.013 inch (0.330 mm)	X	X
0.010 inch (0.254 mm)	X	X
0.007 inch (0.178 mm)	X	X
0.005 inch (0.127 mm)	X[3]	X
Support Structure	Soluble	Soluble
Available Colors	Ivory Blue White Black Dark Grey Red Orange Yellow Green	Black[5] Dark Blue Dark Grey Green Light Gray Yellow White Orange Ivory Red
Tensile Strength[4]	XZ: 4,470 psi (30.8 MPa) ZX: 3,990 psi (27.5 MPa)	XZ: 4,750 psi (32.8 MPa) ZX: 4,110 psi (28.3 MPa)
Tensile Elongation[4]	XZ: 8.1% ZX: 1.8%	XZ: 5.9% ZX: 1.8%
IZOD Impact, unnotched (XZ orientation)	5.45 ft-lb/in (291 J/m)	5.33 ft-lb/in (285 J/m)
Z-Strength Ratio	87%	91%
Unique Properties	Variety of color options	UV-stable with the best aesthetics of any FDM material

[1] ABS-M30 is available only in Black on the F120 and F770.
[2] ASA is available only in Ivory on the F120 and F770.
[3] Build orientation is on side long edge.
[4] Literature value unless otherwise noted.
[5] Material properties listed are for ivory; some values vary slightly in black.

ASA vs. ABS

Tests were conducted according to published Stratasys FDM material testing methods, in compliance with the relevant ASTM standards.

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. End-use material performance can be impacted (+/-) by, but not limited to, part design, end-use conditions, test conditions, etc. Actual values will vary with build conditions. Tested parts were built on Fortus 400mc at 0.010" (0.254 mm) slice. Product specifications are subject to change without notice.

The performance characteristics of these materials may vary according to application, operating conditions, or end use. Each user is responsible for determining that the Stratasys material is safe, lawful, and technically suitable for the intended application, as well as for identifying the proper disposal (or recycling) method consistent with applicable environmental laws and regulations. Stratasys makes no warranties of any kind, express or implied, including, but not limited to, the warranties of merchantability, fitness for a particular use, or warranty against patent infringement.

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