ASA

ASA is the UV-resistant cousin of ABS. It prints with cleaner surfaces, comes in more colors than any other FDM material, and holds its strength and color outdoors, which makes it our go-to for parts that face sunlight and weather.

UV stable
Holds strength after 1,000 h accelerated UV (ASTM G154)

1.08
Specific gravity at 23 °C (ASTM D792)

98 °C
Heat deflection at 264 psi (ASTM D648)

About this material

ASA (acrylonitrile styrene acrylate) behaves a lot like ABS but resists ultraviolet light much better, so it keeps its color and strength outdoors where ABS would fade and embrittle. It also prints with a cleaner surface and is available in more colors than any other FDM material, while sitting right alongside ABS mechanically.

UV weathering

Stratasys cycled ASA in a QUV chamber per ASTM G154 for 1,000 hours. After exposure, tensile stress at break changed only marginally (30.5 MPa to 29.5 MPa), confirming ASA holds up for outdoor parts.

Typical applications

Outdoor and exposed housings, brackets and covers, functional prototypes, jigs and fixtures, and low-volume production, especially cosmetic parts where color choice matters.

Physical properties

PROPERTY	TYPICAL VALUE	TEST METHOD
Specific gravity	1.08 (at 23 °C)	ASTM D792
HDT at 66 psi	103 °C XY / 102 °C ZX	ASTM D648 B
HDT at 264 psi	98.2 °C XY / 97.6 °C ZX	ASTM D648 B
Glass transition (Tg)	104 °C (219 °F)	ASTM D7426
Volume resistivity	> 6.89e14 Ωcm	ASTM D257
Thermal conductivity (30 °C)	0.164 W/m·K	ASTM E1952

Tensile properties (ASTM D638)

PROPERTY	F900 XZ	F900 ZX	F770 XZ	F770 ZX
Yield strength [MPa]	32.8	No yield	35.2	26.9
Elongation at yield [%]	2.5	—	3.0	2.3
Strength at break [MPa]	31.9	28.3	33.7	27.0
Elongation at break [%]	5.9	1.8	8.4	2.3
Tensile modulus [GPa]	2.14	2.05	1.85	1.62

F900 values are ASA black; F770 values are ASA ivory. XZ (on-edge) runs the layers along the load and prints stronger; ZX (upright) stacks the layers across the load and often shows no yield. Typical values at 0.25 mm (0.010 in.) layer height.

Flexural, compression, and impact (F900)

PROPERTY	XZ ORIENTATION	ZX ORIENTATION
Flexural strength at break [MPa]	No break	51.0
Flexural strength at 5% strain [MPa]	61.5	—
Flexural modulus [GPa]	1.98	1.76
Compressive yield strength [MPa]	75.4	188
Izod impact, notched [J/m]	43.1	23.8
Izod impact, unnotched [J/m]	285	91.1

Flexural per ASTM D790, compression per ASTM D695, Izod impact per ASTM D256.

Source and notes

Values are drawn from the Stratasys ASA material data sheet, document MDS_FDM_ASA_0925a (OEM source). Stratasys lists these as typical values for reference and comparison, not for design specifications or quality control. Properties vary with orientation, color, layer height, and machine.

Full page: https://www.evologymfg.com/manufacturing-capabilities/fdm-fused-deposition-modeling/asa