

ABS-M30

ABS-M30 is a production-grade ABS thermoplastic for FDM. It is strong, tough, and dimensionally stable, and it costs less than the engineering and high-temp grades, which makes it the everyday workhorse for functional prototypes, shop-floor tooling, and short-run end-use parts.

1.05

Specific gravity at 23 °C (ASTM D792)

100 °C

Heat deflection at 264 psi (ASTM D648)

~30 MPa

Tensile yield strength, strongest orientation

About this material

ABS-M30 is a production version of ABS (acrylonitrile butadiene styrene) tuned by Stratasys for FDM. It bonds better layer to layer and prints tougher than standard ABS while staying easy to run. Heat deflection near 100 °C keeps parts stable on a warm shop floor or in a closed vehicle, and the surface sands, paints, and bonds cleanly.

Typical applications

Functional prototypes that get bolted down and tested, jigs and fixtures for the assembly line, light-duty manufacturing tooling, and short-run end-use covers, housings, brackets, and ducts where ABS is the right plastic and volumes do not justify a mold.

Physical properties

PROPERTY	TYPICAL VALUE	TEST METHOD
Specific gravity	1.05 (at 23 °C)	ASTM D792
HDT at 66 psi	104.4 °C (220 °F)	ASTM D648 B
HDT at 264 psi	100.0 °C (212 °F)	ASTM D648 B
Glass transition (T _g)	105.2 °C (221.4 °F)	ASTM D7426
Mean CTE (40–140 °C)	60.77 µm/m·°C	ASTM E831
Volume resistivity	> 6.75 x 10 ¹⁴ @m	ASTM D257

Tensile properties (ASTM D638)

PROPERTY	F900 XZ	F900 ZX	F770 XZ	F770 ZX
Yield strength [MPa]	30.8	27.5	32.5	23.1
Elongation at yield [%]	1.8	1.7	2.1	1.6
Strength at break [MPa]	28.1	26.8	27.6	22.9
Elongation at break [%]	8.1	1.8	4.5	1.6
Tensile modulus [GPa]	2.40	2.30	2.00	1.78

XZ (on-edge) runs the layers along the load and prints stronger and more ductile than ZX (upright), which stacks the layers across the load. We orient the part to put its strength where the load is. Typical values, printed at 0.25 mm (0.010 in.) layer height in black.

Flexural properties (ASTM D790)

PROPERTY	F900 XZ	F900 ZX	F770 XZ	F770 ZX
Strength at break [MPa]	No break	47.7	No break	37.8
Strength at 5% strain [MPa]	58.7	—	58.1	—
Flexural modulus [GPa]	2.22	1.96	2.17	1.84

Compression and impact (F900)

PROPERTY	XZ ORIENTATION	ZX ORIENTATION
Compressive yield strength [MPa]	88.3	208
Compressive modulus [GPa]	2.20	2.16
Izod impact, notched [J/m]	101	32.2
Izod impact, unnotched [J/m]	291	103

Compression per ASTM D695, Izod impact per ASTM D256. Compression is higher in ZX while tensile is higher in XZ, so orientation is a design decision made from how the part is loaded.

Design and orientation notes

Orientation drives strength: a part is strongest along its layers and weakest across them. We commonly print ABS-M30 between 0.127 and 0.330 mm (0.005 to 0.013 in.) layer height, trading surface finish for build speed. It sands, primes, paints, bonds, and vapor smooths well, and soluble support clears enclosed cavities.

Source and notes

Values are drawn from the Stratasys ABS-M30 material data sheet, document MDS_FDM_ABS-M30_0925a ([OEM source](#)). Stratasys lists these as typical values for reference and comparison, not for design specifications or quality control. Results vary with system, orientation, layer height, and geometry.

Full page: <https://www.evologymfg.com/manufacturing-capabilities/fdm-fused-deposition-modeling/abs-m30>