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ASA

A UV-STABLE, PRODUCTION-GRADE THERMOPLASTIC FOR FDM 3D PRINTERS

Now you can build consistently high-quality parts, with exceptional UV stability and the best aesthetics of any FDM® thermoplastic. ASA is poised to become the most popular all-purpose prototyping material for users of Fortus 380mc™, 450mc™ and 900mc™ 3D Printers, and the Stratasys F123™ Series. Matching or exceeding the mechanical properties of ABS, ASA may be your new favorite general prototyping material. Its UV-resistance makes it especially suited in production parts for outdoor commercial and infrastructure use. And its wide selection of colors and matte finish makes it ideal for attractive prototypes in consumer sporting goods, tools and automotive components and accessories.

MECHANICAL PROPERTIES	TEST METHOD	XZ ORIENTATION	ZX ORIENTATION
Tensile Strength, Yield (Type 1, 0.125", 0.2"/min)	ASTM D638	29 MPa (4,200 psi)	27 MPa (3,850 psi)
Tensile Strength, Ultimate (Type 1, 0.125", 0.2"/min)	ASTM D638	33 MPa (4,750 psi)	30 MPa (4,300 psi)
Tensile Modulus (Type 1, 0.125", 0.2"/min)	ASTM D638	2,010 MPa (290,000 psi)	1,950 MPa (280,000 psi)
Elongation at Break (Type 1, 0.125", 0.2"/min)	ASTM D638	9%	3%
Elongation at Yield (Type 1, 0.125", 0.2"/min)	ASTM D638	2%	2%
Flexural Strength (Method 1, 0.05"/min)	ASTM D790	60 MPa (8,700 psi)	48 MPa (6,900 psi)
Flexural Modulus (Method 1, 0.05"/min)	ASTM D790	1,870 MPa (270,000 psi)	1,630 MPa (240,000 psi)
Flexural Strain at Break (Method 1, 0.05"/min)	ASTM D790	No Break	4%

THERMAL PROPERTIES[2]	TEST METHOD	VALUE
Heat Deflection (HDT) @ 66 psi	ASTM D648	98 °C (208 °F)
Heat Deflection (HDT) @ 264 psi	ASTM D648	91 °C (196 °F)
Vicat Softening Temperatre (Rate B/50)	ASTM D1525	103 °C (217 °F)
Glass Transition Temperature (Tg)	DMA (SSYS)	108 °C (226 °F)
Coefficient of Thermal Expansion (flow)	ASTM E831	88 µm/(m•°C) (49 x 10^{-06} in/(in•°F))
Coefficient of Thermal Expansion (xflow)	ASTM E831	83 µm/(m•°C) (46 x 10^{-06} in/(in•°F))

ELECTRICAL PROPERTIES	TEST METHOD	ORIENTATION	VALUE RANGE
Volume Resistivity	ASTM D257	XZ	$1.0x10^{14}$ - $1.0x10^{15}$ ohm-cm
Dielectric Constant	ASTM D150-98	XZ	2.97 - 3.04
Dissipation Factor	ASTM D150-98	XZ	0.009
Dielectric Strength	ASTM D149-09, Method A	XZ	329 V/mil
Dielectric Strength	ASTM D149-09 Method A	ZX	414 V/mil

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At the core: Advanced FDM Technology

FDM (fused deposition modeling) technology works with engineering-grade thermoplastics to build strong, long-lasting and dimensionally stable parts with the best accuracy and repeatability of any 3D printing technology. These parts are tough enough to be used as advanced conceptual models, functional prototypes, manufacturing tools and production parts.

Meet production demands

FDM systems are as versatile and durable as the parts they produce. Advanced FDM 3D Printers boast the largest build envelopes and material capacities in their class, delivering longer, uninterrupted build times, bigger parts and higher quantities than other additive manufacturing systems, delivering high throughput, duty cycles and utilization rates.

Opening the way for new possibilities

FDM 3D Printers streamline processes from design through manufacturing, reducing costs and eliminating traditional barriers along the way. Industries can cut lead times and costs, products turn out better and get to market faster.

No special facilities needed

FDM 3D Printers are easy to operate and maintain compared to other additive fabrication systems because there are no messy powders or resins to handle and contain, and no special venting is required because FDM systems don't produce noxious fumes, chemicals or waste.

MECHANICAL PROPERTIES

TEST METHOD	STANDARD	VALUE
Notched Impact, XZ orientation (Method A, 23 ˚C)	ASTM D256	64 J/m (1.2 ft-lb/n)
Unnotched Impact, XZ orientation (Method A, 23 ˚C)	ASTM D256	321 J/m (6 ft-lb/in)

OTHER	TEST METHOD	VALUE
Specific Gravity	ASTM D792	1.05
Rockwell Hardness	ASTM D785 (Scale R, 73 °F)	82

SYSTEM AVAILABILITY	LAYER THICKENESS CAPABILITY	SUPPORT STRUCTURE	AVAILABLE COLORS[2]
Fortus 380mc Fortus 450mc Fortus 900mc[3] Stratasys F123 Series	0.020 inch (0.508 mm) 0.013 inch (0.330 mm) 0.010 inch (0.254 mm) 0.007 inch (0.178 mm) 0.005 inch (0.127 mm)	Soluble Support	Black, Dark Blue, Dark Gray, Green, Light Gray, Yellow, White, Orange, Ivory, Red

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.

[1] Literature value unless otherwise noted.

[2] The test data was collected using ASA (Natural) specimens. ASA colored material will have similar properties, but can vary by up to 10%.

[3] Fortus 900mc does not have the 0.005 inch (0.127 mm) layer thickness capability.

Orientation: See Stratasys Testing white paper for more detailed description of build orientations.

XZ = X or "on edge"

XY = Y or "flat"

ZX = or "upright"