

ULTEM™ FILAMENT AM1010F

DESCRIPTION

ULTEM™ AM1010F filament is a polyetherimide product for 3D printing applications manufactured from ULTEM™ 1010 resin. The filament provides high heat resistance and mechanical strength, is UL94 V-0 compliant at 1.5 mm and 5VA compliant at 3.0 mm.

TYPICAL PROPERTY VALUES

Revision 20190717

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Modulus			
XY ORIENTATION	2750	MPa	ASTM D638
XZ ORIENTATION	2865	MPa	ASTM D638
ZX ORIENTATION	2840	MPa	ASTM D638
Tensile Stress, brk, Type I, 5 mm/min			
XY ORIENTATION	73	MPa	ASTM D638
XZ ORIENTATION	80	MPa	ASTM D638
ZX ORIENTATION	34	MPa	ASTM D638
Tensile Strain, brk, Type I, 5 mm/min			
XY ORIENTATION	4.0	%	ASTM D638
XZ ORIENTATION	3.8	%	ASTM D638
ZX ORIENTATION	1.3	%	ASTM D638
Flexural Modulus, 1.3 mm/min			
XY ORIENTATION	2520	MPa	ASTM D 790
XZ ORIENTATION	2840	MPa	ASTM D 790
ZX ORIENTATION	2380	MPa	ASTM D 790
Izod Impact, notched, 23°C			
XY ORIENTATION	31	J/m	ASTM D 256
XZ ORIENTATION	37	J/m	ASTM D 256
ZX ORIENTATION	30	J/m	ASTM D 256
Izod Impact, un-notched, 23°C			
XY ORIENTATION	273	J/m	ASTM D 256
XZ ORIENTATION	240	J/m	ASTM D 256
ZX ORIENTATION	128	J/m	ASTM D 256
THERMAL			
HDT, 1.82 MPa, 3.2 mm, unannealed			
XY ORIENTATION	211	°C	ASTM D648
XZ ORIENTATION	210	°C	ASTM D648
ZX ORIENTATION	208	°C	ASTM D648
Coefficient of Thermal Expansion - flow			
XY ORIENTATION	51	µm/(m·°C)	ASTM E 831
XZ ORIENTATION	53	µm/(m·°C)	ASTM E 831
ZX ORIENTATION	53	µm/(m·°C)	ASTM E 831
Coefficient of Thermal Expansion - x-flow			
XY ORIENTATION	53	µm/(m·°C)	ASTM E 831

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
XZ ORIENTATION	52	$\mu\text{m}/(\text{m}\cdot^{\circ}\text{C})$	ASTM E 831
ZX ORIENTATION	53	$\mu\text{m}/(\text{m}\cdot^{\circ}\text{C})$	ASTM E 831
PHYSICAL			
Density	1.275	g/cm^3	ASTM D 792
ELECTRICAL			
Volume Resistivity			
XY ORIENTATION	6.24E+14	Ohm-cm	ASTM D 257
XZ ORIENTATION	1.26E+15	Ohm-cm	ASTM D 257
FLAME CHARACTERISTICS			
FAA Flammability			
XY ORIENTATION, 1.5mm	Passed	-	FAR 25.853
OSU total heat release (2 minute test)			
XY ORIENTATION, 1.5mm	5	$\text{kW}\cdot\text{min}/\text{m}^2$	FAR 25.853
OSU peak heat release rate (5 minute test)			
XY ORIENTATION, 1.5mm	23	kW/m^2	FAR 25.853
Vertical Burn (60s) passes at			
XY ORIENTATION, 1.5mm	2	sec	FAR 25.853
Vertical Burn (12s) passes at			
XY ORIENTATION, 1.5mm	0	sec	FAR 25.853
UL94 Flame Class Rating ⁽¹⁾			
XY ORIENTATION, 1.5mm	V0	-	UL 94
XZ ORIENTATION, 1.5mm	V0	-	UL 94
ZX ORIENTATION, 1.5mm	V0	-	UL 94
XY ORIENTATION, 3.0mm	5VA	-	UL 94
THERMAL PROPERTIES			
Vicat Softening Temperature			
XY ORIENTATION, Rate B/50	220	$^{\circ}\text{C}$	ASTM D 1525
XZ ORIENTATION, Rate B/50	220	$^{\circ}\text{C}$	ASTM D 1525
ZX ORIENTATION, Rate B/50	220	$^{\circ}\text{C}$	ASTM D 1525
ELECTRICAL PROPERTIES			
Dielectric Constant			
XY ORIENTATION at 1.9 GHz	2.9	-	ASTM D 150
XZ ORIENTATION at 1.9 GHz	2.9	-	ASTM D150
Dissipation Factor			
XY ORIENTATION at 1.9 GHz	0.003	-	ASTM D150
XZ ORIENTATION, 1.9 GHz	0.003	-	ASTM D150

(1) UL results provided herein may not be sufficient to waive end use part testing for UL listing. Contact UL for further details.

DISCLAIMER

Typical values only. Not intended for design or specification purposes. Variations within normal tolerances are possible for various colors. Test coupons were printed using a Stratasys FORTUS† 900mc printer under standard parameters unless otherwise noted.

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