

Antero 800NA Annealed



Antero™ 800NA is a PEKK-based FDM® thermoplastic. It combines FDM's design freedom and ease of use with the excellent strength, toughness and wear-resistant properties of PEKK material.

Antero 800NA exhibits high heat resistance, chemical resistance, low outgassing and dimensional stability, particularly in large parts.

Appropriate applications include aircraft components exposed to jet fuel, oil and hydraulic fluid, spacecraft parts that demand low outgassing and chemical-resistant industrial parts. Using Antero 800NA with FDM technology avoids the waste associated with subtractive manufacturing of high-cost bulk PEKK material.

Antero 800NA is available on Fortus 450mc™ 3D Printers and is compatible with breakaway support material SUP8000B™.

Mechanical Properties	Test Method	XZ Orientation	ZX Orientation
Tensile Strength, Yield (Type 1, 0.125 in., 0.2 in./min)	ASTM D638	88.8 ± 11.8 MPa (12,876 ± 1,706 psi)	36.7 ± 4.4 MPa (5,329 ± 645 psi)
Tensile Strength, Ultimate (Type 1, 0.125 in., 0.2 in./min)	ASTM D638	88.8 ± 11.8 MPa (12,876 ± 1,706 psi)	36.7 ± 4.4 MPa (5,329 ± 645 psi)
Tensile Modulus (Type 1, 0.125 in., 0.2 in./min)	ASTM D638	3.9 ± 0.3 GPa (561 ± 50 ksi)	4.0 ± 1.4 GPa (584.9 ± 198.9 ksi)
Elongation at Break (Type 1, 0.125 in., 0.2 in./min)	ASTM D638	2.56 ± 0.65%	0.83 ± 0.28%
Elongation at Yield (Type 1, 0.125 in., 0.2 in./min)	ASTM D638	2.65 ± 0.64% ¹	0.75 ± 0.27% ²
Flexural Strength (Method 1, 0.05 in./min)	ASTM D790	172.8 ± 4.9 MPa (25,056 ± 704 psi)	53.6 ± 8.2 MPa (7,778 ± 1,196 psi)
Flexural Modulus (Method 1, 0.05 in./min)	ASTM D790	40.3 ± 0.1 GPa (5,838.4 ± 15.9 ksi)	2.96 ± 0.12 GPa (429.0 ± 17.6 ksi)
Flexural Strain at Break (Method 1, 0.05 in./min)	ASTM D790	No break	1.77 ± 0.21% ³
Notched Impact (Method A, 23 °C)	ASTM D256	27.2 ± 5.3 J/m (0.51 ± 0.1 ft-lb/in)	16.5 ± 6.4 J/m (0.31 ± 0.31 ft-lb/in)
Unnotched Impact (Method A, 23 °C)	ASTM D256	625 ± 123 J/m (11.71 ± 2.31 ft-lb/in)	48 ± 10 J/m (0.90 ± 0.19 ft-lb/in)
Compressive Strength, Yield (Method 1, 0.05 in./min)	ASTM D695	108.0 ± 12.8 MPa (15,662 ± 1,859 psi)	105.8 ± 4.6 MPa (15,342 ± 668 psi)
Compressive Strength, Ultimate (Method 1, 0.05 in./min)	ASTM D695	108.0 ± 12.8 MPa (15,662 ± 1,859 psi)	105.8 ± 4.6 MPa (15,342 ± 668 psi)
Compressive Modulus (Method 1, 0.05 in./min)	ASTM D695	2.60 ± 0.22 GPa (377.5 ± 31.8 ksi)	2.38 ± 0.05 GPa (345.9 ± 6.7 ksi)

¹ 5/30 bars did not yield per the MTS machine, average calculated with 25 samples

² 8/30 bars did not yield per the MTS machine, average calculated with 22 samples

³ 13/30 bars did not break, average calculated with 17 samples

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Thermal Properties	Test Method	Value
Heat Deflection (HDT) @ 66 psi	ASTM D648	163 °C (325.4 °F)
Heat Deflection (HDT) @ 264 psi	ASTM D648	157 °C (314.6 °F)
Glass Transition Temperature (Tg)	ASTM D7426-08	151 °C (303.8 °F)
Coefficient of Thermal Expansion (X)	ASTM E831	48.89 $\mu\text{m}/(\text{m}\cdot^{\circ}\text{C})$ (27.16 $\mu\text{in}/(\text{in}\cdot^{\circ}\text{F})$)
Coefficient of Thermal Expansion (Y)	ASTM E831	46.61 $\mu\text{m}/(\text{m}\cdot^{\circ}\text{C})$ (25.89 $\mu\text{in}/(\text{in}\cdot^{\circ}\text{F})$)
Coefficient of Thermal Expansion (Z)	ASTM E831	52.54 $\mu\text{m}/(\text{m}\cdot^{\circ}\text{C})$ (29.19 $\mu\text{in}/(\text{in}\cdot^{\circ}\text{F})$)

Electrical Properties	Test Method	Value	
		XY	ZX
Volume Resistivity	ASTM D257	$> 1.4 \times 10^{14} \Omega$	$> 1.4 \times 10^{14} \Omega$
Dielectric Constant	ASTM D150-98	3.23	3.32
Dissipation Factor	ASTM D150-98	0.004	0.003

Outgassing	Test Method	Value
Total Mass Loss (TML)	ASTM E595	0.27% (1% max)
Collected Volatile Condensable Material (CVCM)	ASTM E595	0.006% (0.10% max)
Water Vapor Recovered (WVR)	ASTM E595	0.152%

Burn Testing	Test Method	Value
Horizontal Burn (15 sec)	14 CFR/FAR 25.853	Passed
Vertical Burn (60 sec)	14 CFR/FAR 25.853	Passed
Vertical Burn (12 sec)	14 CFR/FAR 25.853	Passed
45° Ignition	14 CFR/FAR 25.853	Passed
Heat Release	14 CFR/FAR 25.853	Passed
NBS Smoke Density (flaming)	ASTM F814/E662	Passed
NBS Smoke Density (non-flaming)	ASTM F814/E662	Passed

Other	Test Method	Value
Specific Gravity	ASTM D792	1.31
Chemical Compatibility	MIL-STD-810G; Method 504.1	No damage visible

System Availability	Layer Thickness Capability	Support Structure	Available Colors
Fortus 450mc™	0.010 inch (0.254 mm)	SUP8000B (breakaway)	■ Natural

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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. All values after "±" are standard deviations. 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 450mc @ 0.010" (0.254 mm) slice. Fluids tested include Skydrol 500B-4, MEK (methyl ethyl ketone), Toluene, Dichloromethane (DCM), Ethyl Acetate, and Jet-A aviation fuel. Product specifications are subject to change without notice.

Ten samples were built on three different machines, resulting in 30 samples total used in each mechanical test in both the XZ and ZX orientations.

The performance characteristics of these materials may vary according to application, operating conditions or end use. Each user is responsible for determining 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.

For further testing details please see our Antero 800NA white paper.

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