

HX5: Technical Specs

MECHANICAL PROPERTIES		ASTM	-65°F -54°C	73°F 23°C	HX5 160°F 71°C	250°F 121°C	250°F (Wet) 121°C (Wet)
Tensile Strength	Ksi MPa	D638	45.4 313	38.2 264	33.5 231	27.0 186	27.1 187
Tensile Modulus	Ksi MPa		4,100 28,100	4,000 27,800	3,800 26,200	3,700 25,700	3,800 26,400
Poisson's Ratio			0.347	0.397	0.400	0.407	-
Compression Strength	Ksi MPa	D695	51 350	43 299	37 258	33 229	33 229
Compression Modulus	Ksi MPa		1,270 8,800	1,240 8,500	1,150 8,000	1,020 7,000	1,200 8,300
Flexural Strength	Ksi MPa	D6272	54 380	53 360	48 330	42 290	-
Flexural Modulus	Ksi MPa		3,420 23,890	3,080 21,250	3,040 20,930	3,070 21,140	-
Shear Strength	Ksi MPa	D5379	15 103	14 95	13 89	11 79	11 79
Bearing Strength	Ksi MPa	D5961	42 293	41 283	37 254	37 258	36 249
OHT Strength	Ksi MPa	D5766	19 130	18 123	18 129	18 124	17 117
OHC Strength	Ksi MPa	D6484	41 285	37 253	36 248	33 225	33 233
Notched Izod, Impact	(ft-lb/in) (J/m)	D256	0.945 50.4	0.589 31.4	-	-	-
Density (g/cc)	(lb/ft³) (g/cc)	D792	-	89 1.43	-	-	-

THERMAL PROPERTIES		ASTM	HX5
Glass Transition Temperature		D3418	316°F 158°C
Heat Deflection Temperature		D648	500°F 260°C
Spontaneous Ignition Temperature		D1929	986°F 530°C
Horizontal Burn Rate		D635	Meets horizontal burn rates
Optical Smoke Density Evaluation		E662	Flaming Exposure, Maximum Ds of 130 @ 1079 seconds
Toxicity		E800	No measurable toxic gases, Only CO & CO ₂ emissions
Total Mass Loss		E1559	0.217%
Volatile Condensable Materials (@ 77)		E1559	0.0001%
Outgassed Species		E1559	Water (99.8%), Other (0.2%)
Thermal Conductivity	Heating, BTU-in/hr-ft²-°F Heating, W•m⁻¹•K⁻¹	E1530	3.30 to 3.58 0.475 to 0.516
Coefficient of Thermal Expansion	L/L/°F L/L°C	E831	2.11 X 10⁻⁶ 3.8 X 10⁻⁶





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HX5 TEST REPORT	DESCRIPTION	AEROSPACE	DEFENSE	SPACE
AAMTR0004-P	Salt Fog Testing of Primed HX5	✓	✓	
AAMTR0005-P	Optical smoke Density Evaluation for HX5 in Accordance with ASTM E 662	✓		
AAMTR0006-P	Rate and Extent of Burning in Horizontal Position of HX5 – ASTM D635	✓		
AAMTR0007-P	Toxicity Evaluation of HX5 in Accordance with ASTM E 800	✓		
AAMTR0011-P	Outgassing Measurements on HX5			✓
AAMTR0014-P	Fuel Soak Test of HX5 at Company 1002	✓	✓	
AAMTR0016-P	<i>Vertical 60 Seconds Flammability Test for Products used in Compartment Interiors of Transport Category Airplanes – FAR 25.853 (a)</i>	✓		
AAMTR0017-P	<i>Vertical 12 Seconds Flammability Test for Products used in Compartment Interiors of Transport Category Airplanes – FAR 25.853</i>	✓		
AAMTR0018-P	<i>Gas Toxicity Test of HX5 Material for Interior and Equipment Parts – AITM 3.0005</i>	✓		
AAMTR0020-P	<i>Smoke Density Test for Cabin Materials – FAR 25.853 (d)</i>	✓		
AAMTR0022-P	<i>Heat Release Rate for 0.20" thick HX5 Specimens Exposed to Radiant Heat (OSU) – FAR 25.853(d)</i>	✓		
AAMTR0023-P	<i>HX5 subjected to environmental soaks of various fluids according to Mil Std-810F, Method 504 and tested according to ASTM 6272</i>	✓	✓	
AAMTR0025-P	<i>Total Ionization Dosage (TID) Gamma Irradiation Test and Four-Point Flexural Mechanical Test on HX5 Coupons</i>			✓
AAMTR0032-P	<i>Electroless Plating of HX5 with Nickel over Copper (100/100, 100/300 and 100/500 µin) and Shielding Effectiveness Test for Plated Samples and Bare HX5 per IEEE 299-2006 and MIL-STD-285</i>	✓	✓	✓
AAMTR0039-P	<i>Evaluation of HX5 Powder Coating by PPG Industries</i>	✓		
AAMTR0044-P	<i>Electrical Surface and Volume Resistivity Tests for Bare HX5 and Electroless Plated HX5 Samples with Nickel over Copper</i>	✓	✓	✓
AAMTR0050-P	<i>Galvanic Corrosion Test for HX5 Material Coupled with 6061-T6 Aluminum and Brass C360 per ASTM G71-14 Test Method in Conjunction with ASTM G102</i>	✓	✓	
AAMTR0089-P	<i>Hydrogen Compatibility Study at PNNL: Dynamic Mechanical Analysis (DMA), Project #21-026</i>	✓	✓	
AAMTR0099-P	<i>Hydrogen Compatibility Study at Sandia National Laboratory: Effects of Cyclic Pressure Hydrogen Exposure on Tensile and Flexural Performance of HX5 Material, Project #22-002</i>	✓	✓	
AAMTR0101-P	<i>RPM Coupons Mechanical Testing</i>	✓	✓	✓

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