ADDMAN

MATERIAL DATASHEET

HexPEKK®-100

Technology: SLS

Selective Laser Sintering | 3D Printing

**Reinforced with AS4 Carbon Fiber*

Material Description

HexPEKK®-100 is a high-performance polymer made for additive manufacturing using selective laser sintering (SLS). Reinforced with chopped carbon fiber, it offers outstanding strength, chemical resistance, and thermal stability—meeting aerospace standards for flammability, smoke, and toxicity.

At 50% the weight of metal with far lower thermal expansion, HexPEKK®-100 is ideal for mission-critical parts exposed to extreme temperatures, fuels, and solvents.

Benefits

Lightweight Metal Replacement

Replaces aluminum with a high-strength polymer that's 50% lighter and resists deformation under thermal stress.

Static Dissipative

Offers ESD protection (10^6–10^9 Ω/sq) without sacrificing mechanical performance—critical for electronics and satellites.

Flight-Qualified & Trusted

Listed in NCAMP with B-basis design allowables; used in hardware for aerospace primes and the U.S. DoD.

Sustainable & Scalable

Available in multiple powder grades for cost-tiered flexibility

Mechanical Properties

Property		Units	X	Z
Poisson's Ratio *ASTM D638*		Ratio	0.37	0.33
Compression *ASTM D695*	Strength (2% Offset Yield)	MPa	184	172
		ksi	26.7	25.0
	Modulus	GPa	5.86	5.17
		ksi	850	750
Flexural (4-point) *ASTM D790*	Strength	MPa	162	111
		ksi	23.5	16.1
	Modulus	GPa	5.54	4.64
		ksi	804	673
	Strain	%	3.3	2.5

Physical Properties

Property	Units	Value
Density ASTM D792	g/cm³	1.31
	lb/in³	0.048
Surface Roughness As-is ASME B46.1 (Surface Comparator)	µin	300 RMS
Glass Transition Temperature, Tg ASTM D3418	°C	160
	°F	320
Melting Temperature, Tm ASTM D3418	°C	300
	°F	572
Service Temperature	°C	-184 to +149
	°F	±300
Heat Deflection ASTM D648 0.455 MPa / 66 psi	°C	277.4
	°F	531.3
Heat Deflection ASTM D648 1.82 MPa / 264 psi	°C	184.9
	°F	364.7
Flammability, Smoke, & Toxicity (FAR Part 25.853 Appendix F)	Complies Data available upon request	

Thermal Properties

Property	Temperature	Units	X	Z
CTE ASTM E831	(+30/+150°C)	ppm/°F	19.3	32.9
Thermal Conductivity ASTM D7984	29°C	(W/mK)	0.32	0.39
Thermal Conductivity ASTM D7984	160°C	(W/mK)	0.37	0.47

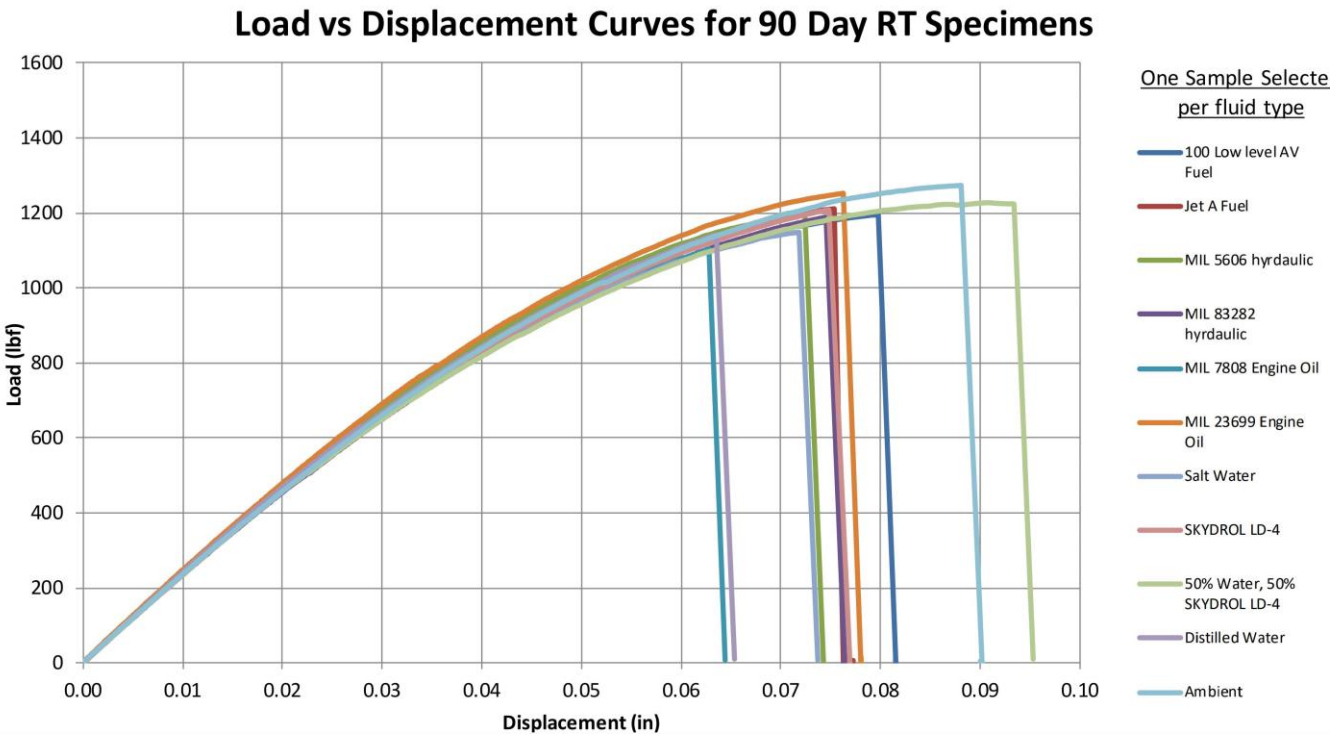
Electrical Properties

Surface Resistivity ASTM D257	Ω/sq	< 1 x 109
Volume Resistivity ASTM D257	Ω*cm	< 1 x 1011
Permittivity @ 10 GHz	ε'	16
	ε"	3
Attenuation @ 10 GHz	dB/cm	6

Tension Properties

Temperature	Property	Units	X	Z
-300°F (-184°C) CTD	Tensile Strength	MPa	101.4	75.1
		Ksi	14.7	10.9
	Tensile Modulus	MPa	8074	6936
		Ksi	1171	1006
	Strain	%	1.3	1.2
-65°F (-54°C) CTD	Tensile Strength	MPa	116.5	75.8
		Ksi	16.9	11.0
	Tensile Modulus	MPa	6950	4999
		Ksi	1008	725
	Strain	%	2.0	1.7
72°F (22°C) RTA	Tensile Strength	MPa	111.3	70.3
		Ksi	16.1	10.2
	Tensile Modulus	MPa	6563	4654
		Ksi	952	675
	Strain	%	2.4	1.8
180°F (82°C) ETW	Tensile Strength	MPa	85.7	65.9
		Ksi	12.4	9.6
	Tensile Modulus	MPa	6143	4364
		Ksi	891	633
	Strain	%	2.9	2.0
250°F (121°C) ETW	Tensile Strength	MPa	57.3	44.5
		Ksi	8.3	6.5
	Tensile Modulus	MPa	5585	4068
		Ksi	810	590
	Strain	%	6.4	3.6
300°F (149°C) ETW	Tensile Strength	MPa	31.7	25.9
		Ksi	4.6	3.8
	Tensile Modulus	MPa	1758	1441
		Ksi	255	209
	Strain	%	23.5	13.0

Chemical Resistance

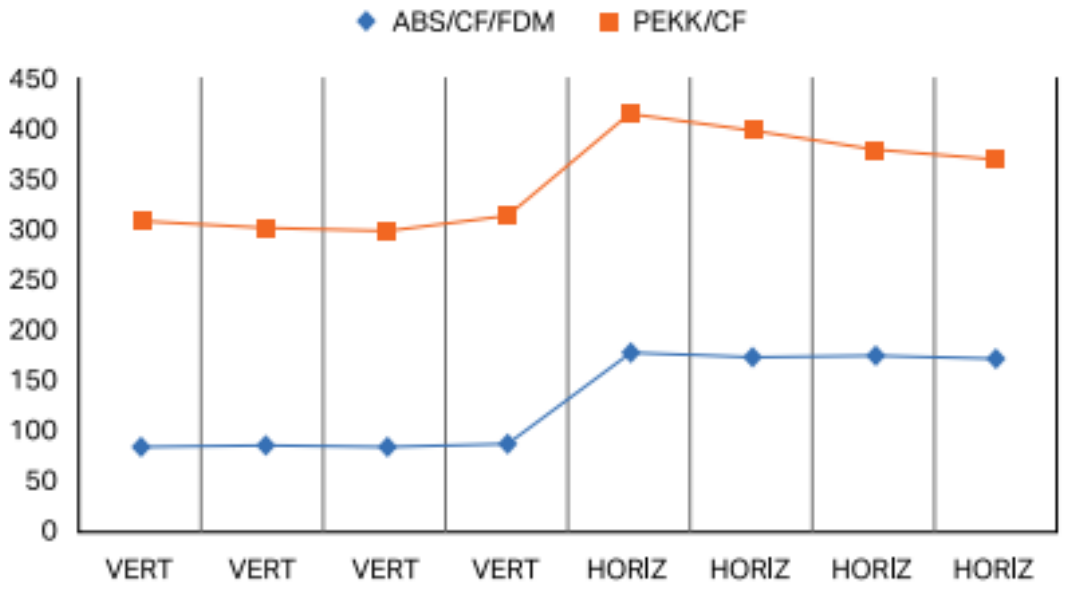


Part Geometry Guidelines

Feature	Metric	Imperial
Max Part Size (L×W×H)	616 × 318 × 527 mm	24.25 × 12.5 × 20.75 in
Min Wall Thickness	2.032 mm	0.08 in
Min Hole Diameter	2 mm	0.08 in
Thickness Tolerance	+0.5 / -0.25 mm	+0.02 / -0.01 in
Surface Profile Tolerance	2 × (0.0075 × Part Max + 1) mm	2 × (0.0075 × Part Max + 0.04) in
Typ. Surface Roughness (Finished)	<12.5 Ra µm	—
Typ. Surface Roughness (Unfinished)	—	<500 Ra µm

Fracture Testing

ADDMAN Fracture Testing ABS/CF vs HexPEKK-100



Applications

Structural Brackets & Mounts
Ideal for lightweighting and metal replacement in support, avionics, and cockpit hardware.

Ducting & Covers
Performs in thermal and chemical extremes for ECS, avionics, and EMI-shielded enclosures.

Wire & Cable Management
Used in harness routing and clamps where precision, repeatability, and RF transparency matter.

Connectors & Device Housings
Delivers durability and ESD protection for high-complexity enclosures and electronics.

Surgical Guides & Handles
Suitable for sterilizable, ergonomic tools and imaging accessories with tight tolerances.

HexPEKK-100 delivers the rare combination of ESD protection, structural performance, and flight-qualified data.
Certified. Trusted. Mission-Ready.