

# MATERIAL PROPERTIES

## ISOPLAST\* Flanged Hex Nuts Fiber Reinforced Polymer Fastener System Metric Version

Note: Available in Imperial Only

Property (coupon values)	ASTM Test	Units	Diameter /Threads per Millimeter				
			9.5 16 UNC	12.7 13 UNC	15.9 11 UNC	19.1 10 UNC	25.4 8 UNC
Ultimate Thread Shear Capacity Using CP Hex Nut <sup>1 2 6</sup>		kg	567	1,134	1,769	2,563	3,357
Max. Ultimate Design Tensile Load Using CP Hex Nut <sup>1 2 5 6</sup>		kg	454	907	1,415	2,050	2,812
Flexural Strength <sup>2 3</sup>	D790	MPa	413	413	413	413	413
Flexural Modulus <sup>2 3</sup>	D790	GPa	13.8	13.8	13.8	17.3	19
Compressive Strength (LW) <sup>2 3</sup>	D695	MPa	379	379	379	379	414
Ultimate Transverse Shear <sup>2 3</sup>	B565	load kg	1,905	3,357	5,262	7,802	12,428
Transverse Shear Yield <sup>2 3</sup>		load kg	953	1,497	2,041	3,401	5,670
Dielectric Strength <sup>2 3</sup>	D149	kV/mm	1.58	1.58	1.58	1.58	1.58
Water Absorption <sup>2</sup>	D570	%	1	1	1	1	1
Coefficient of Thermal Expansion (LW)	D696	10 <sup>-6</sup> K <sup>-1</sup>	9.5	9.5	9.5	9.5	9.5
Torque Strength Using CP Hex Nut Lubricated With SAE 10W30 Motor Oil <sup>2 4 5 6</sup>	Ultimate	m-Kg	1.1	2.0	4.5	6.9	15.8
	Recommended	m-Kg	0.55	1.1	2.21	3.32	6.91
Stud Weight <sup>3</sup>		Kg/m	0.1	0.18	0.31	0.47	0.88
Thickness Hex Nut		mm	19.1	21.7	31.0	40.4	44.5
Diameter of Flange		mm	18.9	25.4	31.8	49.5	50.8

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L W = lengthwise

Notes: 1. The results are average values based on random sampling and testing of production lots. Composite materials are not homogeneous; and therefore, the location of the coupon extraction can cause variances in the coupon results. Creative Pultrusions publishes an average value of random samples from production lots.

<sup>1</sup>Applies to single nut only; multiple nuts do not yield corresponding results.

<sup>2</sup>Ultimate strength values are average obtained in design testing.

<sup>3</sup>Values are based on unthreaded rod.

<sup>4</sup>Torque results are dependent on several variable factors including the lubricant used, the length of stud between nuts, alignment, washer surfaces, etc. Therefore, if such results of torque tightening are important, it is vital that torque limits be determined experimentally for the exact installation conditions.

<sup>5</sup>Appropriate safety factors must be applied.

<sup>6</sup>Properties apply to Superstud!<sup>TM</sup> used with CP Hex Nut.

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