

MATERIAL PROPERTIES

Superstud!TM/Nuts! Square Nuts Fiber Reinforced Polymer Fastener System

Property (coupon values)	ASTM Test	Units	Diameter /Threads per Inch					
			3/8" 16 UNC	1/2" 13 UNC	5/8" 11 UNC	3/4" 10 UNC	1" 8 UNC	
Ultimate Thread Shear Capacity Using Standard CP Square Nut ^{1 2 6}		lbs	1,000	2,000	3,100	4,500	6,200	
Max. Ultimate Design Tensile Load Using CP Square Nut ^{1 2 5 6}		lbs	800	1,600	2,480	3,600	4,960	
Flexural Strength ^{2 3}	D790	psi	60,000	60,000	60,000	60,000	60,000	
Flexural Modulus ^{2 3}	D790	10 ⁶ psi	2.0	2.0	2.0	2.5	2.75	
Compressive Strength (LW) ^{2 3}	D695	psi	55,000	55,000	55,000	55,000	60,000	
Ultimate Transverse Shear ^{2 3}	B565	load lb.	4,200	7,400	11,600	17,200	27,400	
Transverse Shear Yield ^{2 3}		load lb.	2,100	3,300	4,500	7,500	12,500	
Dielectric Strength ^{2 3}	D149	KV/in	40	40	40	40	40	
Water Absorption ³	D570	%	1	1	1	1	1	
Coefficient of Thermal Expansion (LW)	D696	10 ⁻⁶ in/in/°F	3.0	3.0	3.0	3.0	3.0	
Torque Strength Using CP Square Nut Lubricated With SAE 10W30 Motor Oil ^{2 4 5 6}	Ultimate	ft-lb	8	15	33	50	115	
	Recommended	ft-lb	4	8	16	24	50	
Stud Weight ³		lb/ft	.076	.129	.209	.315	.592	
Flammability	D635	Self-Extinguishing on All						
Thickness Square Nut		in	.437	.562	.688	.813	1.062	
Width Square Nut		in	.688	.875	1.062	1.250	1.625	

LW = lengthwise

Note: 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.

¹Applies to single nut only; multiple nuts do not yield corresponding results.

²Ultimate strength values are average obtained in design testing.

³Values are based on unthreaded rod.

⁴Torque 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.

⁵Appropriate safety factors must be applied.

⁶Properties apply to Superstud!TM used with CP Square Nut.

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