

# DATA SHEET

## Superstud!<sup>TM</sup>/Nuts!

### Fiber Reinforced Polymer Fastener System

#### Application



*Square Nuts*



*Hex Nuts*



*Field Application*

#### Description and Features

Superstud!<sup>TM</sup>/Nuts! is a fiberglass reinforced vinyl ester all-thread rod and FRP fastener system with superior physical and mechanical properties. Both shear and tensile strength of Superstud!<sup>TM</sup> are much greater than any other fiberglass stud and fastener system, and in severe corrosive environments Superstud!<sup>TM</sup> typically outperforms metal fasteners. Superstud!<sup>TM</sup>/Nuts! are easily assembled with standard mechanical tools and wrenches. Superstud!<sup>TM</sup>/Nuts! also offers the following features and benefits versus other traditional fastening systems:

##### *Corrosion Resistant*

Low Maintenance Cost  
Reduced Downtime

##### *Electrical Insulation*

Magnetically Transparent  
Non-Conductive

##### *High Strength*

Structural Design Capabilities

##### *Lightweight*

Ease of Fabrication

#### Materials of Construction

Superstud!<sup>TM</sup> all-thread rods are pultruded, and is a proprietary combination of fiberglass reinforcements and Class I flame retardant vinyl ester resin designed specifically for mechanical fastener applications where corrosion resistance, non-conductivity and nonmagnetic characteristics are a must. Unlike competitive products, Superstud!<sup>TM</sup> is constructed with proprietary polymeric thread reinforcement. This means there are no exposed glass fibers after threads are machined. The nut system is available in a square Class I flame retardant vinyl ester resin or a thermoplastic hex shaped nut.

#### Writing Specifications

All-thread rods and nuts shall be Superstud!<sup>TM</sup> \_\_\_\_\_ ” - \_\_\_\_\_ UNC as manufactured by Creative Pultrusions, Inc., 214 Industrial Park, Alum Bank, PA 15521 USA. All properties per published values for Superstud!<sup>TM</sup>/Nuts! (see back page).

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# Properties

Property (coupon values)	Type of Nut	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 <sup>1 2 6</sup>	CP Square Nut CP Hex Nut		lbs.	1,000 1,250	2,000 2,500	3,100 3,900	4,500 5,650	6,200 7,400
Max. Ultimate Design Tensile Load <sup>1 2 5 6</sup>	CP Square Nut CP Hex Nut		lbs.	800 1,000	1,600 2,000	2,480 3,120	3,600 4,520	4,960 6,200
Flexural Strength <sup>2 3</sup>	CP Square Nut CP Hex Nut	D790	psi	60,000 60,000	60,000 60,000	60,000 60,000	60,000 60,000	60,000 60,000
Flexural Modulus <sup>2 3</sup>	CP Square Nut CP Hex Nut	D790	10 <sup>6</sup> psi	2.0 2.0	2.0 2.0	2.0 2.0	2.5 2.5	2.75 2.75
Compressive Strength (LW) <sup>2 3</sup>	CP Square Nut CP Hex Nut	D695	psi	55,000 55,000	55,000 55,000	55,000 55,000	55,000 55,000	60,000 60,000
Ultimate Transverse Shear <sup>2 3</sup>	CP Square Nut CP Hex Nut	B565	load lb.	4,200 4,200	7,400 7,400	11,600 11,600	17,200 17,200	27,400 27,400
Transverse Shear Yield <sup>2 3</sup>	CP Square Nut CP Hex Nut		load lb.	2,100 2,100	3,300 3,300	4,500 4,500	7,500 7,500	12,500 12,500
Dielectric Strength <sup>2 3</sup>	CP Square Nut CP Hex Nut	D149	KV/in	40 40	40 40	40 40	40 40	40 40
Water Absorption <sup>3</sup>	CP Square Nut CP Hex Nut	D570	%	1 1	1 1	1 1	1 1	1 1
Coefficient of Thermal Expansion (LW)	CP Square Nut CP Hex Nut	D696	10 <sup>-6</sup> in/in/°F	3.0 3.0	3.0 3.0	3.0 3.0	3.0 3.0	3.0 3.0
Torque Strength Using CP Square Nut Lubricated with SAE 10W30 Motor Oil <sup>2 4 5 6</sup>	CP Square Nut CP Hex Nut	Ultimate	ft-lb	8 8	15 15	33 33	50 50	115 115
	CP Square Nut CP Hex Nut	Recommended	ft-lb	4 4	8 8	16 16	24 24	50 50
Stud Weight <sup>3</sup>	CP Square Nut CP Hex Nut		lb/ft	0.076 0.076	0.129 0.129	0.209 0.209	0.315 0.315	0.592 0.592
Flammability	CP Square Nut CP Hex Nut	D635	Self-Extinguishing on All					
			-	-	-	-	-	-
Thickness Square Nut	CP Square Nut CP Hex Nut		in	0.437 0.750	0.562 0.855	0.688 1.220	0.813 1.590	1.062 1.750
Width Square Nut	CP Square Nut CP Hex Nut		in	0.688 0.745	0.875 1.000	1.062 1.250	1.250 1.950	1.625 2.000

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. Optimum corrosion resistance and insulating properties can be achieved by sealing Superstud!™ with a compatible resin.*

<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!™ used with CP Square and Hex Nuts.

## Availability

Superstud!™/Nuts are available in diameters of 3/8", 1/2", 5/8", 3/4" and 1". Superstud!™ is stocked in 48" and 96" lengths for immediate delivery. Special lengths and threading will be quoted upon request. Superstud!™/Nuts are available in a uniform gray color to eliminate the need for painting or post finishing. The hex shaped nut is available in either gray or natural colors.