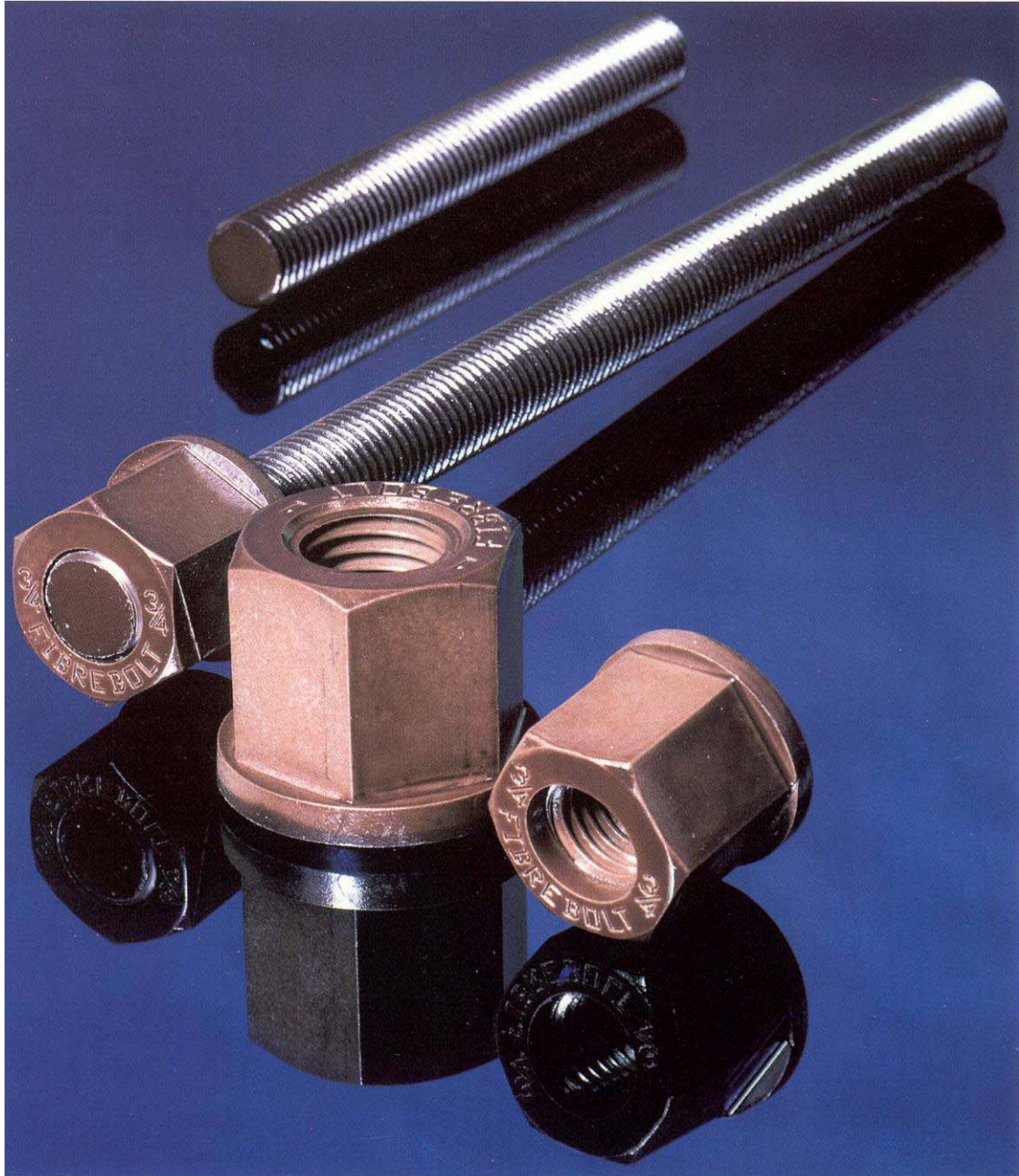


# FRP STUDS AND NUTS



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# INSTALLATION

Fibreglass threaded rod and glass reinforced thermoplastic nuts have properties different to conventional steel fasteners.

The following are guidelines in their use:

- Threaded rod is made by thread cutting a special FRP bar stock. Threads must be well lubricated during installation. A silicone spray, light oil or dry lubricant would be suitable but use should not be excessive.
- Torque wrench should be used when tightening nuts. Recommended torque should not be greater than 50% of the ultimate tabled torque strength.

**INSTALLATION TORQUE TABLE**

Size	Ultimate Torque Strength	Recommended Maximum Installation Torque
3/8-16 UNC	8 ft-lbs.	4 ft-lbs.
1/2-13 UNC	18 ft-lbs.	8 ft-lbs.
5/8-11 UNC	35 ft-lbs.	16 ft-lbs.
3/4-10 UNC	50 ft-lbs.	24 ft-lbs.
1-8 UNC	110 ft-lbs.	50 ft-lbs.

- In chemical or harsh environments, standard nuts should be coated or sealed after installation. A coating of polyurethane, resin or adhesive will be required where possible. For cases where nuts need to be removed, a thin coating of sprayed on polyurethane is recommended.
- Tightening is best achieved by a socket type wrench. Ensure full contact with nut face when tightening. Poor fit between wrench and nut could cause fracture of the corners.
- Wherever possible, the nut/threaded rod interface should be coated with an adhesive or resin to prevent loosening.
- Data presented does not cater for applications involving vibration or impact. Testing would be required to ascertain suitability.
- The use of metal nuts on the FRP threaded rod is not recommended as strengths will be reduced unless thread forms are a direct match and fits are very good.
- It is important that the bearing faces of the nuts are parallel to the surfaces being joined.

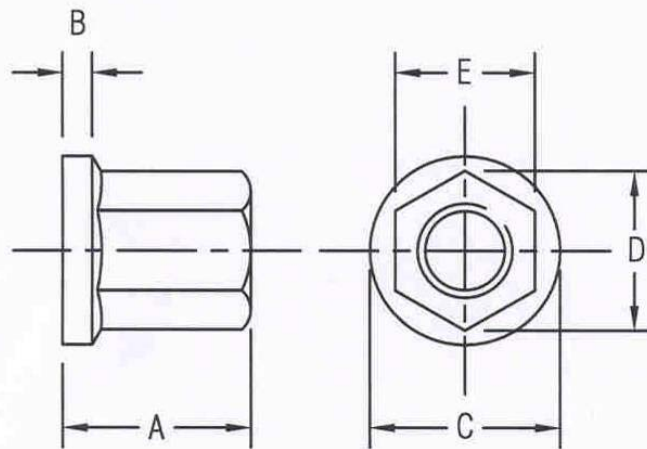
# TYPICAL PROPERTIES OF THREADED ROD / NUTS

Exel Composites threaded rod and nuts are manufactured using premium vinyl ester resin containing UV inhibitors. The properties listed below are the result of testing according to the ASTM test method indicated.

PROPERTIES	ASTM	Units	VALUE Diameter – Threads per Inch (UNC)					
			3/8-16	1/2-13	5/8-11	3/4-10	1-8	
Ultimate Transverse Shear	B-565 (Double Shear)	lb	4,200	6,800	10,000	13,400	24,000	
Longitudinal Compressive Strength	D-695	psi	50,000	50,000	50,000	50,000	50,000	
Flexural Strength	D-790	psi	70,000	70,000	70,000	70,000	70,000	
Flexural Modulus	D-790	psi x 10 <sup>6</sup>	2.5	2.5	2.5	2.5	2.5	
Flammability	D-635	Self-extinguishing for all						
Fire Retardant	E-84	Class 1						
Water Absorption 24hr immersion	D-670	% max	0.8	0.8	0.8	0.8	0.8	
Longitudinal Coefficient of thermal Expansion	D-696	10 <sup>-6</sup> in/in/°F	6	6	6	6	6	
Ultimate Thread Shear using fibreglass nut		lb	1,200	2,400	3,600	4,000	8,200	
Ultimate Torque Strength fibreglass nut lubricated with SAE 10W30 motor oil		ft-lb	10	18	35	52	110	
Rod Weight		lb/ft	.07	.08	.20	.30	.53	
Nut Weight		lb	.01	.02	.04	.06	.14	
Nut Dimensions		in X	.68x.45	.86x.56	1.06x.69	1.24x.82	1.63x1.1	
Colour		Grey						

# FIBRE NUTS SPECIFICATIONS

Flanged Hex Nuts



Thread Size	A	B	C	D	E
	mm	mm	mm	mm	mm
3/8"-16 UNC	19.1	3.0	19.1	16.1	14.1
1/2"-13 UNC	21.7	3.0	25.5	21.4	18.5
5/8"-11 UNC	31.0	3.3	31.8	26.7	23.4
3/4"-10 UNC	40.4	3.3	38.1	32.6	28.5
1"-8 UNC	44.5	4.8	50.8	44.5	37.5

Tolerance on all dimensions  $\pm 0.5$