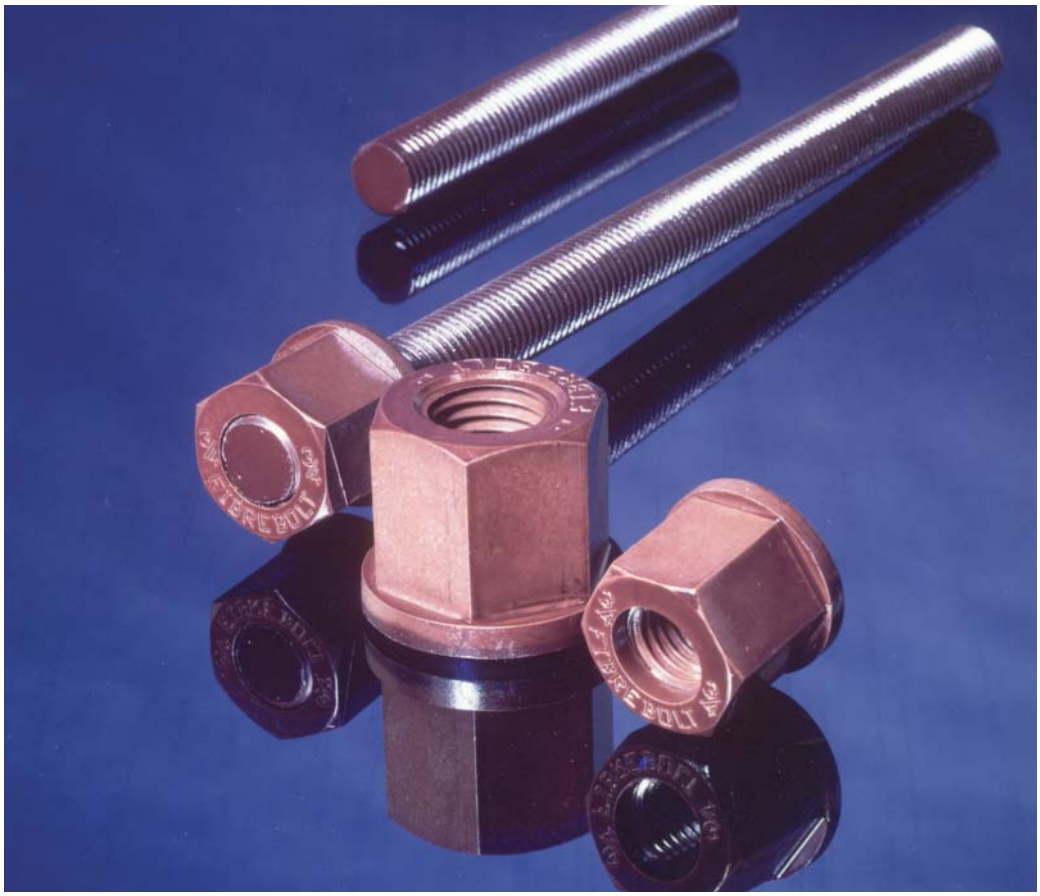
STRONGWELL

FIBRE BOLT®

FIBERGLASS STUDS AND NUTS



- **Corrosion Resistant**
- **Easy to Fabricate**
- **Low Maintenance**
- **Non-Conductive**
- **Transparent to Electromagnetic Waves**
- **Color Blends with Most Structural Materials**

FIBREBOLT® fiberglass studs and nuts are ideal for applications requiring mechanical fasteners that must be non-corrosive, non-conductive and/or transparent to electromagnetic waves. FIBREBOLT® studs are machined from pultruded fiberglass vinyl ester rods. The hex shaped nut is thermoplastic. They are easily assembled with a standard six point socket wrench.

FIBREBOLT® studs and hex nuts are available in diameters of 3/8", 1/2", 5/8", 3/4" and 1" for immediate delivery. Four foot bolt lengths are standard, with custom lengths and partial length threading available on request. Brown is the standard color. The studs and nuts have UV inhibitors to provide resistance to ultraviolet degradation and corrosion.

Typical applications include:

- Chemical process equipment
- Air and water pollution equipment
- Marine applications
- Cellular antenna mounts and screens

Properties

Properties	Test Method	3/8" 16 UNC	1/2" 13 UNC	5/8" 11 UNC	3/4" 10 UNC	1" 8 UNC
Ultimate thread shear using Strongwell fiberglass nut (lb.) ①,②		1,350	2,400	3,790	5,150	9,600
Max ultimate tensile load using Strongwell fiberglass nut (lb.) ②		1,050	2,000	3,100	4,500	6,500
Max ultimate tensile load using two (2) Strongwell fiberglass nuts (lb.) ②		1,470	2,800	4,340	6,300	9,700
Transverse shear on threaded rod - double shear (min. load lb.) ③	ASTM-B-565	3,000	5,000	7,500	12,000	22,000
Transverse shear on threaded rod - single shear (min. load lb.) ③		1,600	2,600	3,800	6,200	15,000
Compressive strength - longitudinal ③ (min. psi)	ASTM-D-695	60,000	60,000	60,000	60,000	60,000
Flexural strength (min. psi) ③	ASTM-D-790	50,000	50,000	50,000	50,000	50,000
Flexural modulus (min. psi x 10^6) ③	ASTM-D-790	2.0	2.0	2.0	2.50	2.75
Recommended maximum installation torque strength using Strongwell fiberglass nut lubricated with SAE 10W30 motor oil (ft.-lbs.) ②		4	8	16	24	50
Dielectric strength ASTM-D-149 (kv/in.)		35	35	35	35	35
Water absorption 24 hr. immersion - threaded	ASTM-D-570	1%	1%	1%	1%	1%
Coefficient of thermal expansion - longitudinal (in./in./°F)		5×10^{-6}	5×10^{-6}	5×10^{-6}	5×10^{-6}	5×10^{-6}
Max recommended operation temp.-based on 50% retention of ultimate thread shear strength °C (°F)		95°C (203°F)	95°C (203°F)	95°C (203°F)	95°C (203°F)	95°C (203°F)
Flammability	ASTM-D-635	Self-Extinguishing on All				
Stud weight (lb./ft.)		0.07	0.12	0.18	0.28	0.50
Thickness of nut and washer in inches		3/4"	7/8"	1-1/8"	1-1/4"	1-5/8"
Diameter of washer in inches		1"	1-1/8"	1-1/4"	1-1/2"	2"

① Ultimate strength values are averages obtained in design testing.

② New property categories added to better clarify stud thread shear properties.

③ Strength values are minimums derived from multiple production sample testings.

NOTE

- *All test results are for bolts with single nuts only.*
- *Appropriate safety factors must be applied.*
- *Properties above do not apply when fiberglass stud is used with metal nut. No data has been generated for metal nuts. If metal nuts are used, strengths will be reduced because of less thread engagement. If metal nuts are used, extreme care should be taken to assure that the threads match and that a snug fit is achieved.*

INSTALLATION PROCEDURE

FIBREBOLT® studs and nuts have properties and characteristics different from steel. Failure to follow the procedure below can result in damage and/or premature failure of FIBREBOLT®.

1) Verify that the nuts and studs are well lubricated. If nuts are to be removed during the application, a light oil, dry lubricant, or silicone spray is required. Lubricants should be used in small quantities.

2) Bearing surfaces of nuts must be parallel to the surfaces being fastened.

3) A torque wrench must be used. See the table below:

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.

4) Wrenches must make full contact with all nut edges. Partial contact will cause the corners to fracture, affecting the performance of the stud/nut assembly. A standard six point socket is recommended for the hex nuts.

5) For assemblies in which the nut will not be subsequently removed, the stud/nut assembly should be coated to insure that the nuts do not loosen. The recommended bonding technique is to secure the nut to the proper torque value, then coat the entire nut and exposed stud assembly with a thick layer of adhesive or resin.

6) The FIBREBOLT® stud has cut and coated threads. Threads that will be exposed to harsh environments should be resealed after installation. If removal of the nut is anticipated, a very thin (1 mil) sprayed-on coat of polyurethane will normally be effective. Heavier coats of polyurethane, resin, or adhesive are recommended where possible.

7) Property values were obtained for static conditions. Vibration should be eliminated or minimized in applications utilizing FIBREBOLT®.

STRONGWELL

ISO-9001 Certified Manufacturing Plants

BRISTOL DIVISION*
400 Commonwealth Ave., P.O. Box 580, Bristol, VA 24203-0580 USA
(276)645-8000 FAX (276)645-8132
**FIBREBOLT® manufacturing location*

CHATFIELD DIVISION
1610 Highway 52 South, Chatfield, MN 55923-9799 USA
(507)867-3479 FAX (507)867-4031

www.strongwell.com