

Product Description

- Pressure - Up to 1500 PSI (10,3 MPa)
- Resin System - Anhydride Cured Epoxy
- Reinforcement - Premium Fiberglass
- Joining Systems - API 8rd, Integral Joint
- Joint Length - 30 Feet (9,1 Meters) Nominal, API
- Fittings - A variety of filament wound API threaded Nipples, Couplings and Swages
- Temperature - Up to 150° F (65.6° C) Maximum
- Sizes - 1½ through 2 7/8 inches

Tubing Design

- Non API
- Design Temperature - Up to 150° F (65.6° C)
- Wall Thickness - Nominal
- 100% Factory Hydrotest
- Tensile Test - Since the hydrotest is across the joint and unsupported, tensile loads of a proportional amount are generated.

Benefits

- Controls corrosion caused by CO₂, H₂S & Salt Water
- Improved Flow Efficiency

Applications

- Disposal or Injection Tubing to depths of 10,000 Feet
- Production Tubing - ESP, Gas Lift, or Rod Pump

Physical Properties

- Density (lbs/cu ft) = 122
- Density (kgs/cu cm) = 1,96 x 10⁻³
- Specific Gravity = 1.96

Thermal Properties

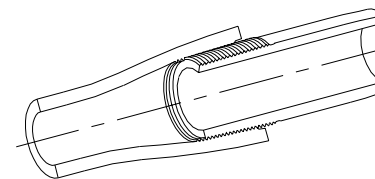
- Coefficient of Thermal Conductivity
0.2BTU/(ft.hr.°F) 3,0 cal./(cm.hr.°C)
- Coefficient of Thermal Expansion
12.5 x 10⁻⁶ in/in/°F (22,6 x 10⁻⁶ mm/mm/°C)

Flow Factors

- Hazen Williams C = 150
- Absolute Roughness = 0.00021 in.
(1.7 x 10⁻⁵ mm)

Nominal Moduli

- Modules of Elasticity
Hoop - 3.5 PSI x 10⁶ (GPa 24,1)
Axial - 1.5 PSI x 10⁶ (GPa 10,3)
- Poisson's Ratio (Minor) = 0.38

**Joining System****Integral Joint****API THREADS (EUE 10rd, EUE 8rd, OD 8rd)**

- Advanced Composite Thread
(Patent No's 4,999,389 & 5,179,140)
- Precision molded with Epoxy, Graphite and Ceramic.
- Tighter tolerances than steel.
- Improved make and break properties.
- Minimizes thread and wrench damage.
- Provides higher thread shear than cut or ground threads.
- Chemical resistant threads.
- Compatible with steel API Threads

Pipe-Thread Size Inches	PIPE DIMENSIONS (NOMINAL)									IJ		PRESSURE		TENSILE		COLLAPSE						
	Inside Diameter		Drift Diameter		Outside Diameter		Wall Thickness		Pipe Weight	Connection Diameter		RATING ⁽¹⁾		STAR ⁽²⁾ ULTIMATE		RATING ⁽¹⁾ ULTIMATE ⁽²⁾						
	In	(mm)	In	(mm)	In	(mm)	In	(mm)	Lbs/ft (kg/m)	In	(mm)	PSI	(MPa)	PSI	(MPa)	Lbs	(kgs)	Lbs	(kgs)	PSI	(MPa)	PSI
1 1/2	1.90	1.50 (38,1)	1.44 (36,6)	1.76 (44,7)	0.13 (3,3)	0.72 (0,45)	2.60 (66,0)	1500 (10,3)	6000 (41,4)	4400 (1996)	12000 (5443)	1500 (10,3)	4000 (28,6)									
1 1/2	1.90	1.73 (43,9)			0.11 (2,8)			1500														
2	2 3/8	2.00 (50,8)	2.10 (53,3)	2.24 (56,9)	0.12 (3,1)	0.87 (1,29)	3.10 (78,7)	1250 (8,6)	4500 (31,0)	5200 (2359)	14500 (6577)	500 (3,5)	1300 (9,0)									
2 1/2	2 7/8	2.43 (61,7)	2.36 (59,9)	2.67 (67,8)	.012 (3,1)	1.05 (1,56)	3.80 (96,5)	1000 (6,9)	3750 (25,9)	6500 (2948)	17500 (7938)	250 (1,7)	700 (6,8)									

Joining System Information

API THREADED SIZE - Inches	1 1/2	2 3/8	2 7/8
Thread Type (4)	EUE 10rd	EUE 8rd	EUE8rd
Thread Length - In (mm)	2.36 (59,9)	2.94 (74,7)	3.25 (82,6)
Make-Up Length Loss - In/Jt (mm/ft)	2.11 (53,6)	2.69 (68,3)	3.00 (76,2)
Make-Up Torque - Ft. Lbs (mm)	• Optimum • Minimum • Maximum	125 (170) 100 (136) 175 (238)	150 (204) 150 (204) 250 (340)
Recommended Make-Up Tool	No. 5 Strap		
Pin Upset O.D. - In (mm)	2.15 (54,6)	2.60 (66,0)	3.10 (78,7)
Handling Tools			
Elevators T&C (Shoulder Type) - In. (5)	2 3/8	2 7/8	3 1/2
Elevators U (Slip Type) (6)	MYT	MYT	MYT
Floor Slips (Standard Type) - In. (7)	1 1/2	2 3/8	2 7/8
Thread Compatibility			
FRP Long vs. Steel Short Form (4) (Extra Threads, Front of FRP Pin)	6	5	6
Lubricant Usage - Joint/Gallon	100	100	100
Stretch Factor (in./lb.ft)	Series		
Stretch factor based on 1,000 lb. tensile load per 1,000 ft.	1000 1500	--- 5.82	3.47 3.09
			2.74 2.10

Corresponding Numbered Notes:

- Ratings** - All ratings are maximum operating limits. Exceeding these limits will void the warranty on all Star pipe.
- Ultimates** - The typical mode of failure for pressure is weep and for tensile it is an across the joint pipe body shear.
- Threads** - All 1 1/2" EUE 10rd and 2 3/8" - 4 1/2" EUE 8rd API threads conform to API 5B Table 14 (L4 is minimum) and all 5 1/2" - 9 5/8" O.D. 8rd casing threads conform to API 5B, Table 7 (L4 is minimum).
- Elevators T&C** - The 1000 & 1500 PSI have a smaller OD which may work with the same size elevators as the thread size.
- Elevators IJ** - The setting plate must be removed so that the slips will properly set on the fiberglass pipe. Star IJ tubing does not have an upset on the female end. Sizing slip type elevators requires use of the tubing O.D. instead of the upset O.D. on the male end. Rubber setting plates are available to minimize marking and to improve the fit. Shorter bolts are required to hold in place.
- Floor Slips** - When running lighter weight (1000-1500 PSI) products, it is good practice to replace the slip dies to make sure they will latch on the pipe body.

Setting Tension

Refer to Fiber Glass Systems, L.P. Downhole Tubing Installation and Application Practices Section 3.9.2 - Considerations for Setting Tubing Tension (Anhydride & Aromatic Amine Tubing)

LIMITED WARRANTY

Seller warrants that PRODUCTS manufactured by Seller when properly installed, used, and maintained shall be free from defects in material and workmanship. Seller's responsibility under this warranty shall be limited to replacing or repairing PRODUCTS, at Seller's option, the PRODUCTS that prove defective in material or workmanship within one (1) year from the date of installation, provided that Buyer gives Seller prompt notice of any defect or failure and satisfactory proof thereof. Any defective product must be returned to Seller's factory, or any other repair facility designated by Seller. Seller will deliver replacement of defective PRODUCTS to Buyer freight prepaid to the destination provided for in the original order. PRODUCTS returned to Seller for which Seller provides replacement under this warranty shall become the property of the Seller.

This limited warranty does not apply to failure of PRODUCTS caused by abrasive materials, exposure to aggressive fluids, improper application, mishandling, or abuse.

In the event PRODUCTS are altered or repaired by the Buyer and/or end user without prior written approval of the Seller, all warranties are void. Equipment and accessories not manufactured by the seller warranted only to the extent of and by the original manufacturer's warranty. A new warranty period shall not be established for repaired or replaced materials, PRODUCTS, or supplies. Such items shall remain under warranty only for the remainder of the warranty period on original materials, PRODUCTS, or supplies.

The foregoing warranties are in lieu of all other warranties, whether oral, written, express, implied or statutory. Implied warranties of fitness and merchantability shall not apply. Seller's warranty obligations and Buyer's remedies thereunder (except as to title) are solely and exclusively as stated herein. In no case will Seller be liable for consequential damages, labor performed in connection with removal and replacement of the PRODUCTS, loss of production or any other loss incurred because of interruption of service.

IMPORTANT NOTICE

This literature is intended as a guide only. All values listed in this product specification are nominal. Unsatisfactory product results may occur due to environmental fluctuations, variations in operating procedures, or interpolation of data. We suggest that personnel using this data have specialized training and experience in the application of these products and their normal installation and operating conditions. Your intended application of these products should be verified for propriety by your engineers. We expressly disclaim responsibility for any consequential or incidental damages resulting from the installation or use of these products since we do not determine the degree of care utilized during the product installation or service. We reserve the right to revise this data, as necessary, without notice. We welcome comments regarding this product literature.

© The API QMS Registered mark is either a trademark of registered trademark of the American Petroleum Institute in the United States and/or other countries.



HEADQUARTERS

P.O. Box 37389
 2425 S.W. 36th Street
 San Antonio, Texas 78237
 Phone: 1 (210) 434-5043
 Fax: 1 (210) 434-7543
 www.starfiberglass.com
 E-Mail: info@starfiberglass.com