

Product Description

- Pressure - Up to 450 psi (3,1 MPa) Static and 300 psi (2,1 MPa) Cyclic
- Resin System - Aliphatic Amine Cured Epoxy
- Reinforcement - Premium Fiberglass
- Joining Systems - Mechanical O-Ring
- Joint Length - 30.5 Feet (9,3 Meters) Nominal
Random Lengths of 20 to 32 Feet (6,1 to 9,8 Meters)
- Fittings - A variety of filament wound low pressure 2"-8" Bonded and 8"-12" SS threaded are available.
- Temperature - Up to 200° F (93.3° C) Maximum
- Sizes - 2 through 12 inches

Design Spec

API 15LR

- | | |
|----------------------|----------------------------------|
| • Design Life | 11.4 Years Cyclic |
| • Design Temperature | 150° F* (65.6° C) |
| • Wall Thickness | Min. (cat. nom.) |
| • Factory Hydrotest | 1.25 x rating |
| • Service Factor | 1 to 1 |
| • Design Stress | LTHS
ASTM 2992-A
8,885 psi |
- 100% Factory Hydrotest - All products are tested at a minimum of 1.25 x the series rated pressure of 150° F (65.6° C)

*150° F Static values are interpolated



Benefits

- Corrosion Control
- Reduced Installation Costs
- Improved Flow Efficiency
- Reduced Paraffin & Scale Build-Up
- Reduced Maintenance Cost

Physical Properties

- Density (lbs/cu ft) = 124
- Density (kgs/cu cm) = 1,93 x 10⁻³
- Specific Gravity = 1.99

Thermal Properties

- Coefficient of Thermal Conductivity
0.2 BTU/(ft.hr.° F) 3,0 cal./(cm.hr.° C)
- Coefficient of Thermal Expansion
8.7 x 10⁻⁶ in/in/°F (15,7 x 10⁻⁶ mm/mm/°C)

Applications

- Flow or Injection Lines
- Transfer or Disposal Lines
- Oil, Gas, Saltwater, CO₂ and H₂S

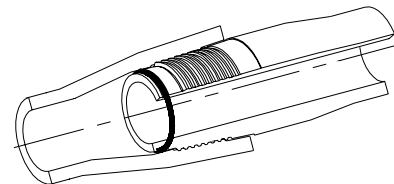
Flow Factors

- Hazen Williams C=150
- Effective Roughness = 0.00006 in.
(1524 x 10⁻⁶ mm)

Nominal Moduli

- Modulus of Elasticity
Hoop - 3.3 PSI x 10⁶ (GPa 22,8)
Axial - 2.0 PSI x 10⁶ (GPa 13,8)
- Poisson's Ratio (Minor) = 0.39

Joining System



Star Super Seal (SSS)

Star Super Seal (SSS)

- Fast, Reliable Installation
- Preparatory Self Restrained Mechanical O-Ring Seal: - 2" - 6" (4 threads per inch)
- 8" - 12" (2 threads per inch)
- All Weather Connection
- Standard O-Rings are Standard Nitrile for Applications up to 200° F (93.3° C), PH to 8.
- Special O-Rings available for high concentrations of CO₂, H₂S and other special applications.

Pipe Size In.	PIPE DIMENSIONS (NOMINAL)						Minimum Bending Radius Ft (m)	Maximum Deflection In/Jt (cm/Jt)	STAR™ RATED PRESSURES ⁽⁴⁾		Ultimate Collapse ASTM D-2924 psi (MPa)	Ultimate ⁽¹⁾ Pressure ASTM D-1599 psi (MPa)	Maximum Support Span Ft (m)	Short Term Tensile Rating Lbs (kgs)	Capacity Bbls/1,000 ft (m³/km)		
	Series	Inside Diameter		Outside Diameter		Wall Thickness			Pipe Weight	Connection Diameter						Static ⁽³⁾	Cyclic ⁽²⁾
		In (mm)	(mm)	In (mm)	(mm)	In (mm)			Lbs/ft (kg/m)	In (mm)						150° F (65.6° C) psi (MPa)	150° F (65.5° C) psi (MPa)
2	450	2.22 (56,4)	2.35 (59,7)	0.07 (1,8)	0.50 (0,7)	3.15 (80,0)	118 (36,0)	44 (111,8)	450 (3,1)	300 (2,1)	210 (1,4)	1800 (12,4)	9 (2,8)	1300 (2866)	4.80 (2,5)		
3	450	3.33 (84,6)	3.49 (88,6)	0.08 (2,0)	0.80 (1,2)	4.35 (110,5)	175 (53,3)	30 (76,2)	450 (3,1)	300 (2,1)	120 (0,8)	1500 (10,3)	11 (3,4)	2400 (5291)	10.80 (5,6)		
4	450	4.32 (109,7)	4.49 (114,0)	0.08 (2,0)	1.10 (1,6)	5.45 (138,4)	224 (68,3)	23 (58,4)	450 (3,1)	300 (2,1)	60 (0,4)	1200 (8,3)	11 (3,4)	3200 (7055)	18.10 (9,4)		
6	450	6.39 (162,3)	6.65 (168,9)	0.13 (3,3)	2.50 (3,7)	7.65 (194,3)	332 (101,2)	16 (40,6)	450 (3,1)	300 (2,1)	70 (0,5)	1200 (8,3)	14 (4,3)	7400 (16314)	39.70 (20,7)		
8	300	7.74 (196,6)	7.95 (201,9)	0.11 (2,8)	2.80 (4,2)	9.25 (235,0)	397 (121,0)	13 (33,0)	300 (2,1)	200 (1,4)	20 (0,1)	800 (5,5)	14 (4,3)	7300 (16094)	58.10 (30,3)		
8	450	7.74 (196,6)	8.04 (204,2)	0.15 (3,8)	3.80 (5,7)	9.40 (238,8)	402 (122,5)	13 (33,0)	450 (3,1)	300 (2,1)	60 (0,4)	1200 (8,3)	15 (4,6)	10500 (23148)	58.10 (30,3)		
10	300	9.84 (249,9)	10.09 (256,3)	0.13 (3,3)	4.60 (6,8)	11.95 (303,5)	505 (153,9)	10 (25,4)	300 (2,1)	200 (1,4)	20 (0,1)	800 (5,5)	16 (4,9)	11100 (24471)	94.10 (49,1)		
10	450	9.84 (249,9)	10.23 (259,8)	0.19 (4,8)	6.50 (9,7)	12.10 (307,3)	511 (155,8)	10 (25,4)	450 (3,1)	300 (2,1)	60 (0,4)	1200 (8,3)	17 (5,2)	17200 (37919)	94.10 (49,1)		
12	300	11.81 (300,0)	12.11 (307,6)	0.15 (3,8)	6.00 (8,9)	13.90 (353,1)	605 (184,4)	9 (22,9)	300 (2,1)	200 (1,4)	20 (0,1)	800 (5,5)	17 (5,2)	15700 (34612)	135.50 (70,7)		
12	450	11.81 (300,0)	12.26 (311,4)	0.22 (5,6)	8.50 (12,6)	14.10 (358,1)	613 (186,8)	9 (22,9)	450 (3,1)	300 (2,1)	50 (0,3)	1200 (8,3)	19 (5,9)	24000 (52910)	135.50 (70,7)		

Joining System Information (Metric Conversions are in Parenthesis)

Pipe Size-Inches	2	3	4	6	8	10	12
Joining System							
STAR™ Super Seal							
• Pin Upset O.D	In (mm) 2.91 (73,9)	4.07 (103,4)	5.10 (129,5)	7.26 (184,4)	8.86 (225,0)	11.25 (285,8)	13.27 (337,1)
• Thread Length	In (mm) 3.00 (76,2)	3.00 (76,2)	3.25 (82,6)	3.50 (88,9)	5.00 (127,0)	6.16 (156,5)	6.85 (174,0)
• Make Up Length Loss	In/Jt (mm/Jt) 2.63 (66,8)	2.63 (66,8)	2.88 (73,2)	3.13 (79,5)	4.75 (120,7)	5.43 (137,9)	6.11 (155,2)
• O-Ring Dash No.	2-229	2-238	2-247	2-260	2-368	250B	2-453

Corresponding Numbered Notes:

- 1. ULTIMATES** - The typical mode of failure for pressure is weeping.
- 2. CYCLIC RATINGS** - The design is based on ASTM D-2992 Procedure A at 150° F (65.6° C). This design provides an 11.4 year life expectancy assuming the product is operated to the full cyclic rating.
- 3. STATIC PRESSURE RATING** - For LP/API products the design is based on API 15LR and ASTM D-2992 Procedure B requirements at 150° F (65.6° C). For LP/Standard products the design is based on standard design conditions as outlined in the first page of this design specification.
- 4. O-RINGS** - Standard commercial 70 durometer nitrile unless otherwise specified. Refer to Section 2.5 of the Fiber Glass Systems Threaded Line Pipe Installation and Application Practices for additional o-ring specifications.

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.

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