

# STAR™ Anhydride Line Pipe (High Pressure - STANDARD DESIGN - Product Data)

## Product Description

- Pressure - Up to 3000 psi (20,7 MPa)
- Resin System - Anhydride Cured Epoxy
- Reinforcement - Premium Fiberglass
- Joining Systems - API 8rd
- Joint Length - 33 Feet (10,0 mts) Nominal  
Random Lengths of 20 to 33 Feet (6,1 to 10,0 mts)
- Fittings - A variety of filament wound API 5B threaded fittings are available. Purchase all fittings by thread size and design pressure rating only.
- Temperature - Up to 150° F (65.6° C) Maximum
- Sizes - 1½ through 8 inches

## High Pressure Design ≥ 500 psi

- Life Expectancy - 20 years at full rating
- Design Temperature - 150° F (65.6° C)
- Wall Thickness - Nominal
- Hoop Stress - Average Long-Term Hydrostatic Strength (LTHS), ASTM D2992-B
- 100% Factory Hydro Test - All sizes to 1.25 times the Series pressure rating
- Non API Design

## Flow Factors

- Hazen-Williams C = 150
- Absolute Roughness = 0.00021 in. (0.00533 mm)

## Nominal Moduli

- Modulus of Elasticity  
Hoop -  $3.5 \times 10^6$  psi (24,1 GPa)  
Axial -  $1.5 \times 10^6$  psi (10,3 GPa)
- Poisson's Ratio (Minor) = 0.38

## Physical Properties

- Density = 121 lbs/cu ft (1938 kgs/cu m)
- Specific Gravity = 1.94

## Thermal Properties

- Coefficient of Thermal Conductivity  
0.23 BTU/(ft•hr•°F) (0.4 W/(m•C°))
- Coefficient of Thermal Expansion  
 $13.7 \times 10^{-6}$  in/in/°F ( $24,7 \times 10^{-6}$  mm/mm/°C)

## Benefits

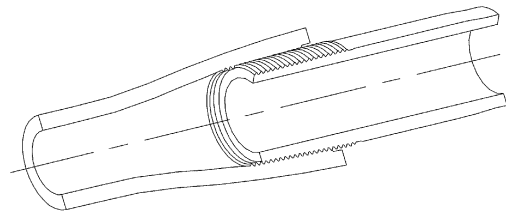
- Corrosion Control
- Reduced Installation Costs
- Improved Flow Efficiency
- Reduced Paraffin & Scale Build-Up
- Reduced Maintenance Cost

## Applications

- Production Lines or Injection Lines
- Transfer Lines or Disposal Lines
- Oil, Gas, Saltwater, CO<sub>2</sub> and H<sub>2</sub>S

## Joining System

Advanced Composite Thread (ACT) or Precision Ground Thread (PGT)



- ACT - Molded threads using a graphite, ceramic and epoxy composite for high performance applications.
- PGT - Typical ground threads produced with numerical controlled grinding equipment.
- All 1½" EUE 10rd and 2 ¾" - 4 ½" EUE 8rd API threads conform to API 5B Table 14, 14 Edition (L4 is minimum) and all 5 ½" - 9 ⅝" OD 8rd casing threads conform to API 5B Table 7, 14 Edition (L4 is minimum).

SIZE		NOMINAL PIPE DIMENSIONS							Minimum Bending Radius Ft (m)	Short-Term Tensile Rating Lbs (kgs)	Mfg. Loc.*
Pipe	Thread	Inside Diameter In (mm)	Outside Diameter In (mm)	Wall Thickness In (mm)	Pipe Weight Lbs/ft (kg/m)	Connection Diameter In (mm)					
<b>Series 500 (3,4 MPa)<sup>(1)</sup> - ACT, PGT (All Sizes)</b>											
4	4 1/2	3.75 (95,3)	3.87 (98,3)	0.06 (1,5)	1.26 (1,9)	5.10 (129,5)	196 (59,7)	3000 (1361)	B		
4	4 1/2	3.91 (99,3)	4.04 (102,5)	0.06 (1,6)	1.19 (1,8)	5.09 (129,2)	204 (62,2)	3000 (1361)	W,H		
5	5 1/2	4.74 (120,4)	4.89 (124,3)	0.08 (2,0)	1.52 (2,3)	5.88 (149,4)	245 (74,7)	3600 (1633)	W		
6	6 5/8	5.50 (139,7)	5.68 (144,3)	0.09 (2,3)	1.95 (2,9)	6.97 (177,0)	284 (86,6)	4400 (1996)	B		
6	6 5/8	5.85 (148,6)	6.04 (153,4)	0.09 (2,4)	2.21 (3,3)	7.01 (178,0)	304 (92,7)	6000 (2722)	W,H		
8	8 5/8	7.50 (190,5)	7.74 (196,6)	0.12 (3,1)	3.63 (5,4)	9.06 (230,2)	389 (118,6)	9500 (4309)	W,H,B		
<b>Series 800 (5,5 MPa)<sup>(1)</sup> - ACT, PGT (All Sizes)</b>											
3	3 1/2	3.00 (76,2)	3.16 (80,1)	0.08 (2,0)	0.91 (1,3)	4.09 (104,0)	159 (48,5)	2400 (1089)	W,H,B		
4	4 1/2	3.75 (95,3)	3.94 (100,1)	0.10 (2,5)	1.51 (2,2)	5.16 (131,1)	199 (60,7)	4000 (1814)	B		
4	4 1/2	3.91 (99,3)	4.11 (104,5)	0.10 (2,6)	1.48 (2,2)	5.15 (130,7)	207 (63,1)	4100 (1860)	W,H		
5	5 1/2	4.74 (120,4)	4.99 (126,6)	0.12 (3,1)	2.21 (3,3)	6.00 (152,3)	251 (76,5)	6100 (2767)	W		
6	6 5/8	5.50 (139,7)	5.79 (147,1)	0.14 (3,6)	2.84 (4,2)	7.15 (181,6)	290 (88,4)	7500 (3402)	B		
6	6 5/8	5.85 (148,6)	6.15 (156,3)	0.15 (3,9)	3.08 (4,6)	7.12 (181,0)	309 (94,2)	9100 (4128)	W,H		
8	8 5/8	7.50 (190,5)	7.89 (200,4)	0.19 (4,9)	4.82 (7,2)	9.29 (236,1)	395 (120,4)	13500 (6124)	W,H		
<b>Series 1000 (6,9 MPa)<sup>(1)</sup> - ACT, PGT (All Sizes)</b>											
2 1/2	2 7/8	2.38 (60,5)	2.53 (64,3)	0.08 (2,0)	0.71 (1,1)	3.44 (87,4)	127 (38,7)	1900 (862)	W		
2 1/2	2 7/8	2.43 (61,7)	2.59 (65,7)	0.08 (2,0)	0.71 (1,1)	3.44 (87,3)	130 (39,6)	1900 (862)	H		
3	3 1/2	3.00 (76,2)	3.20 (81,2)	0.10 (2,5)	1.14 (1,7)	4.15 (105,5)	162 (49,4)	3200 (1452)	W,H,B		
4	4 1/2	3.75 (95,3)	3.99 (101,3)	0.12 (3,0)	1.81 (2,7)	5.22 (132,6)	202 (61,6)	5100 (2313)	B		
4	4 1/2	3.91 (99,3)	4.17 (105,8)	0.13 (3,2)	1.79 (2,7)	5.21 (132,2)	210 (64,0)	5200 (2359)	W,H		
5	5 1/2	4.74 (120,4)	5.05 (128,2)	0.15 (3,9)	2.60 (3,9)	6.11 (155,2)	254 (77,4)	7400 (3357)	W		
6	6 5/8	5.50 (139,7)	5.86 (148,8)	0.18 (4,6)	3.71 (5,5)	7.27 (184,7)	296 (90,2)	10600 (4808)	B		
6	6 5/8	5.85 (148,6)	6.23 (158,3)	0.19 (4,8)	3.60 (5,3)	7.30 (185,4)	312 (95,1)	10700 (4854)	W		
8	8 5/8	7.50 (190,5)	7.99 (202,9)	0.24 (6,2)	6.00 (8,9)	9.47 (240,5)	401 (122,2)	17600 (7983)	W,H,B		
<b>Series 1250 (8,6 MPa)<sup>(1)</sup> - ACT, PGT (All Sizes)</b>											
2	2 3/8	2.00 (50,8)	2.16 (55,0)	0.08 (2,1)	0.59 (0,9)	2.94 (74,8)	109 (33,2)	1600 (726)	W,H,B		
2 1/2	2 7/8	2.38 (60,5)	2.57 (65,3)	0.10 (2,5)	0.90 (1,3)	3.50 (88,9)	130 (39,6)	2600 (1179)	W		
2 1/2	2 7/8	2.43 (61,7)	2.63 (66,8)	0.10 (2,5)	0.90 (1,3)	3.50 (88,8)	133 (40,5)	2600 (1179)	H		
3	3 1/2	3.00 (76,2)	3.25 (82,5)	0.12 (3,1)	1.38 (2,1)	4.21 (107,0)	165 (50,3)	4100 (1860)	W,H,B		
4	4 1/2	3.75 (95,3)	4.06 (103,1)	0.15 (3,8)	2.14 (3,2)	5.34 (135,6)	205 (62,5)	6200 (2812)	B		
4	4 1/2	3.91 (99,3)	4.23 (107,5)	0.16 (4,1)	2.12 (3,2)	5.32 (135,2)	213 (64,9)	6300 (2858)	W,H		
5	5 1/2	4.74 (120,4)	5.13 (130,3)	0.19 (5,0)	3.00 (4,5)	6.23 (158,2)	257 (78,3)	8800 (3992)	W		
6	6 5/8	5.50 (139,7)	5.95 (151,1)	0.23 (5,8)	4.24 (6,3)	7.46 (189,5)	299 (91,1)	12300 (5579)	B		
6	6 5/8	5.85 (148,6)	6.33 (160,8)	0.24 (6,1)	4.50 (6,7)	7.42 (188,4)	318 (96,9)	14000 (6350)	W,H		
8	8 5/8	7.50 (190,5)	8.12 (206,2)	0.31 (7,8)	7.25 (10,8)	9.70 (246,4)	406 (123,7)	21800 (9888)	W,H,B		
<b>Series 1500 (10,3 MPa)<sup>(1)</sup> - ACT (All Sizes), PGT (2"-4" Sizes)</b>											
2	2 3/8	2.00 (50,8)	2.20 (55,9)	0.10 (2,5)	0.75 (1,1)	3.00 (76,3)	112 (34,1)	2200 (998)	W,H,B		
2 1/2	2 7/8	2.38 (60,5)	2.61 (66,3)	0.12 (3,0)	0.95 (1,4)	3.58 (90,9)	131 (39,9)	2700 (1225)	W		
2 1/2	2 7/8	2.43 (61,7)	2.67 (67,9)	0.12 (3,1)	1.10 (1,6)	3.56 (90,3)	136 (41,5)	3300 (1497)	H		
3	3 1/2	3.00 (76,2)	3.30 (83,8)	0.15 (3,8)	1.65 (2,5)	4.33 (110,1)	168 (51,2)	5000 (2268)	W,H,B		
4	4 1/2	3.75 (95,3)	4.12 (104,6)	0.19 (4,8)	2.51 (3,7)	5.46 (138,7)	208 (63,4)	7300 (3311)	B		
4	4 1/2	3.91 (99,3)	4.30 (109,2)	0.19 (4,9)	2.48 (3,7)	5.50 (139,7)	216 (65,8)	7400 (3357)	W,H		
5	5 1/2	4.74 (120,4)	5.21 (132,4)	0.24 (6,0)	3.78 (5,6)	6.40 (162,6)	263 (80,2)	11400 (5171)	W		
6	6 5/8	5.50 (139,7)	6.05 (153,7)	0.27 (6,9)	5.19 (7,7)	7.64 (194,1)	305 (93,0)	15600 (7076)	B		
6	6 5/8	5.85 (148,6)	6.43 (163,4)	0.29 (7,4)	5.47 (8,1)	7.59 (192,9)	324 (98,8)	17400 (7893)	W,H		
8	8 5/8	7.50 (190,5)	8.25 (209,5)	0.37 (9,5)	9.08 (13,5)	9.93 (252,3)	415 (126,5)	28200 (12792)	W,H,B		

SIZE		NOMINAL PIPE DIMENSIONS										Minimum Bending Radius Ft (m)	Short-Term Tensile Rating Lbs (kgs)	Mfg. Loc.*
Pipe	Thread	Inside Diameter In (mm)	Outside Diameter In (mm)	Wall Thickness In (mm)	Pipe Weight Lbs/ft (kg/m)	Connection Diameter In (mm)								
<b>Series 1750 (12,1 MPa)<sup>(1)</sup> - ACT (All Sizes), PGT (2"-4" Sizes)</b>														
1 1/2	1.90	1.50 (38,1)	1.68 (42,6)	0.09 (2,2)	0.46 (0,7)	2.51 (63,9)	84 (25,6)	1300 (590)	W,H					
2	2 3/8	2.00 (50,8)	2.23 (56,8)	0.12 (3,0)	0.77 (1,1)	3.07 (77,9)	112 (34,1)	2200 (998)	W,H,B					
2 1/2	2 7/8	2.38 (60,5)	2.65 (67,3)	0.14 (3,6)	1.13 (1,7)	3.68 (93,5)	133 (40,5)	3300 (1497)	W					
2 1/2	2 7/8	2.43 (61,7)	2.71 (69,0)	0.14 (3,6)	1.13 (1,7)	3.68 (93,4)	136 (41,5)	3300 (1497)	H					
3	3 1/2	3.00 (76,2)	3.35 (85,1)	0.18 (4,5)	1.69 (2,5)	4.45 (113,1)	168 (51,2)	5000 (2268)	W,H,B					
4	4 1/2	3.75 (95,3)	4.19 (106,4)	0.22 (5,6)	2.86 (4,3)	5.58 (141,7)	211 (64,3)	8500 (3856)	B					
4	4 1/2	3.91 (99,3)	4.37 (111,0)	0.23 (5,8)	2.83 (4,2)	5.62 (142,8)	219 (66,8)	8600 (3901)	W,H					
5	5 1/2	4.74 (120,4)	5.30 (134,5)	0.28 (7,1)	4.21 (6,3)	6.52 (165,7)	266 (81,1)	12900 (5851)	W					
6	6 5/8	5.50 (139,7)	6.15 (156,1)	0.32 (8,2)	5.95 (8,8)	7.78 (197,5)	310 (94,5)	18100 (8210)	W,H,B					
8	8 5/8	7.50 (190,5)	8.38 (212,8)	0.44 (11,2)	10.41 (15,5)	10.17 (258,4)	421 (128,3)	32700 (14833)	W,B					
<b>Series 2000 (13,8 MPa)<sup>(1)</sup> - ACT (All Sizes), PGT (2"-4" Sizes)</b>														
1 1/2	1.90	1.50 (38,1)	1.70 (43,3)	0.10 (2,6)	0.59 (0,9)	2.58 (65,4)	87 (26,5)	1700 (771)	W,H					
2	2 3/8	2.00 (50,8)	2.27 (57,7)	0.14 (3,4)	0.94 (1,4)	3.13 (79,5)	115 (35,1)	2800 (1270)	W,H,B					
2 1/2	2 7/8	2.38 (60,5)	2.70 (68,6)	0.16 (4,1)	1.34 (2,0)	3.74 (95,0)	136 (41,5)	4000 (1814)	W					
2 1/2	2 7/8	2.43 (61,7)	2.76 (70,1)	0.16 (4,2)	1.34 (2,0)	3.74 (94,9)	139 (42,4)	4100 (1860)	H					
3	3 1/2	3.00 (76,2)	3.41 (86,5)	0.20 (5,2)	1.95 (2,9)	4.52 (114,7)	171 (52,1)	5900 (2676)	W,H,B					
4	4 1/2	3.75 (95,3)	4.26 (108,2)	0.25 (6,4)	3.21 (4,8)	5.71 (145,0)	214 (65,2)	9600 (4355)	B					
4	4 1/2	3.91 (99,3)	4.44 (112,8)	0.26 (6,7)	3.50 (5,2)	5.74 (145,9)	225 (68,6)	10900 (4944)	W,H					
5	5 1/2	4.74 (120,4)	5.38 (136,7)	0.32 (8,1)	5.03 (7,5)	6.70 (170,2)	272 (82,9)	15700 (7122)	W					
6	6 5/8	5.50 (139,7)	6.24 (158,6)	0.37 (9,5)	6.50 (9,7)	7.96 (202,1)	313 (95,4)	19900 (9027)	W,H,B					
<b>Series 2500 (17,2 MPa)<sup>(1)</sup> - ACT (All Sizes), PGT (2"-3" Sizes)</b>														
1 1/2	1.90	1.50 (38,1)	1.76 (44,7)	0.13 (3,3)	0.74 (1,1)	2.70 (68,6)	90 (27,4)	2200 (998)	W,H					
2	2 3/8	2.00 (50,8)	2.34 (59,6)	0.17 (4,4)	1.15 (1,7)	3.32 (84,2)	118 (36,0)	3500 (1588)	W,H,B					
2 1/2	2 7/8	2.38 (60,5)	2.78 (70,6)	0.20 (5,1)	1.59 (2,4)	3.93 (99,8)	140 (42,7)	4800 (2177)	W					
2 1/2	2 7/8	2.43 (61,7)	2.85 (72,4)	0.21 (5,3)	1.80 (2,7)	3.92 (99,7)	145 (44,2)	5600 (2540)	H					
3	3 1/2	3.00 (76,2)	3.52 (89,3)	0.26 (6,6)	2.53 (3,8)	4.77 (121,1)	177 (53,9)	7800 (3538)	W,H,B					
4	4 1/2	3.75 (95,3)	4.40 (111,8)	0.32 (8,1)	3.99 (5,9)	6.02 (152,9)	221 (67,4)	12100 (5489)	B					
4	4 1/2	3.91 (99,3)	4.58 (116,4)	0.34 (8,6)	4.26 (6,3)	5.99 (152,2)	231 (70,4)	13500 (6124)	W,H					
<b>Series 3000 (20,7 MPa)<sup>(1)</sup> - ACT (All Sizes) or PGT (2" &amp; 2 1/2" Sizes)</b>														
1 1/2	1.90	1.50 (38,1)	1.82 (46,1)	0.16 (4,0)	0.90 (1,3)	2.83 (71,9)	93 (28,3)	2700 (1225)	W,H					
2	2 3/8	2.00 (50,8)	2.42 (61,5)	0.21 (5,4)	1.36 (2,0)	3.45 (87,5)	121 (36,9)	4200 (1905)	W,H,B					
2 1/2	2 7/8	2.38 (60,5)	2.88 (73,2)	0.25 (6,4)	2.09 (3,1)	4.58 (116,3)	145 (44,2)	6000 (2722)	W					
2 1/2	2 7/8	2.43 (61,7)	2.94 (74,8)	0.26 (6,5)	2.07 (3,1)	4.11 (104,5)	149 (45,4)	6500 (2948)	H					
3**	3 1/2	3.00 (76,2)	3.61 (91,7)	0.31 (7,7)	3.13 (4,7)	4.96 (125,9)	183 (55,8)	9900 (4491)	W,H					
4	4 1/2	3.75 (95,3)	4.54 (115,4)	0.40 (10,1)	5.08 (7,6)	6.33 (160,7)	230 (70,1)	15800 (7167)	W,H,B					

\*\*3" rated to 2900 psi.

**NOTE:** Additional pressure classes are available on request.

<sup>(1)</sup> **Series Rating** - All ratings are maximum operating limits. Exceeding these limits will void the warranty on all NOV Fiber Glass Systems pipe.

<b>*Manufacturing Location</b>		
W = Wichita	H = Harbin	B = Brazil

## Joining System Information (API 8rd Thread)

Joining System Pipe Size - Inches	1 1/2	2	2 1/2	3	4	5	6	8	8	
Thread Size	1.90" EUE 10rd	2 3/8" EUE 8rd	2 7/8" EUE 8rd	3 1/2" EUE 8rd	4 1/2" EUE 8rd	5 1/2" OD 8rd	6 5/8" OD 8rd	8 5/8" OD 8rd	9 5/8" OD 8rd	
• Pin Upset O.D.	In (mm)	2.15 (54,6)	2.60 (66,0)	3.10 (78,7)	3.75 (95,3)	4.75 (120,7)	5.55 (141,0)	6.65 (168,9)	8.65 (219,7)	9.65 (245,1)
• Thread Length	In (mm)	2.36 (59,9)	2.94 (74,7)	3.25 (82,6)	3.50 (88,9)	3.88 (98,6)	4.75 (120,7)	4.25 (108,0)	4.85 (123,2)	5.13 (130,3)
• Make Up Length Loss	In (mm)	2.06 (52,4)	2.56 (65,1)	2.86 (73,0)	3.13 (79,4)	3.50 (88,9)	4.38 (111,1)	3.88 (98,4)	4.50 (114,3)	4.75 (120,7)

**API CONNECTIONS** - All products are produced integral joint unless indicated (TC) Threaded and Coupled. Any order may include up to 15% threaded and coupled pipe. All 1 1/2" EUE 10rd and 2 3/8" - 4 1/2" EUE 8rd API threads conform to API 5B Table 14, 14 Edition (L4 is minimum) and all 5 1/2" - 9 5/8" OD 8rd casing threads conform to API 5B Table 7, 14 Edition (L4 is minimum).

Performance Ratings vs. Temperature		
ASTM D 2992-B	150° F	(65.6°) C
11.4 Year Life, LTHS	24,503 psi	(169,0) MPa
20 Year Life, LTHS (long term hydrostatic stress)	23,768 psi	(163,9) MPa
20 Year Life, LCL (Lower Confidence Limit)	22,297 psi	(153,7) MPa

Pipe Capacity				
Size Pipe	Inside Diameter		Capacity	
	in	(mm)	Bbls/1,000 ft. (m <sup>3</sup> /km)	
1 1/2	1.50	(38,1)	2.20	(1,1)
2	2.00	(50,8)	3.90	(2,0)
2 1/2	2.38	(60,5)	5.50	(2,9)
2 1/2	2.43	(61,7)	5.70	(3,0)
3	3.00	(76,2)	8.70	(4,5)
4	3.75	(95,3)	13.70	(7,1)
4	3.91	(99,3)	14.80	(7,7)
5	4.74	(120,4)	21.80	(11,4)
6	5.50	(139,7)	29.40	(15,3)
6	5.85	(148,6)	33.20	(17,3)
8	7.50	(190,5)	54.60	(28,5)

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15HR-0004 / 15LR-0004.1  
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