

REPSA - Anhydride Line Pipe High Pressure API Design 65°C (150°F) Data Sheet

REPSA Anhydride line pipes have a proven performance and durability, thanks to their excellent corrosion and abrasion resistance.

Applications

With a broad compatibility with various fluids they meet their main application in the following industries:

- Chemical-industrial
- Food
- Steel
- Oil & gas,
- Pharmaceutical
- Automotive.

Compatibility

- Strong acids and bases.
- Water (drinking, process, cooling, residual, etc.).
- Brine
- Condensed.
- Gases (CO₂, H₂S, natural gas, etc.).

Benefits

- Excellent corrosion / abrasion resistance.
- High mechanical resistance.
- Low weight (1/10 of the carbon steel pipe weight).
- Better chemical resistance than carbon steel & PVC / CPVC.
- Similar separation between supports to that required for steel pipes.
- Operating temperatures up to 65° C (150°F).
- Diameter up to 16 inches.
- Operating pressures up to 3500 psi (24,1 MPa)
- Lower maintenance and replacement costs.
- Energy saving. Lower friction load losses and lower pumping costs.
- Easy installation.

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Product Description

- Pressure - Up to 3500 psi (24,1 MPa)
- Resin System - Anhydride Cured Epoxy
- Reinforcement - Premium Fiberglass
- Joining Systems - API 5B 8rd Threaded and AC 2 TPI Threaded. Molded and Machined
- Nominal Length – 29.53 ft (+0.16 ft / -0 ft) (9.0 m (+50 mm / -0 mm))
For other lengths, please contact Reinforced Plastic S.A. Technical Department
- Temperature - Up to 150°F (65° C) Maximum
- Sizes - 2 through 16 inches in diameter

High Pressure Design > 500 psi

- Design Life - 20 years as per API 15 HR
- Design Temperature - 150°F (65° C)
- Reinforced Wall Thickness – Nominal according to API 15 HR (+22.5% / -0%)
- Hoop Stress - Lower Confidence Limit (LCL) of Long-Term Hydrostatic Strength according to ASTM D2992-B and API 15 HR
- 100% Factory Hydro Test - All sizes to 1,5 times the series pressure rating
- Bursting test according to API 15 HR & ASTM D1599 (Procedure B) requirements

Flow Factors

- Hazen Williams C = 150
- Absolute Roughness = 0.00021 in. (0,00533 mm)

Nominal Moduli

- Modulus of Elasticity
 - Hoop – 2.42×10^6 psi (16,75 GPa)
 - Axial – 1.08×10^6 psi (7,24 GPa)
- Poisson's Ratio (Minor) = 0,44

Physical Properties

- Density = 120.5 lbs/cu ft (1930 kgs/cu m)
- Specific Gravity = 1,93

Thermal Properties

- Coefficient of Thermal Conductivity
0.21 BTU/(ft•hr•°F) (0,36 W/(m•K))
- Coefficient of Thermal Expansion
 9.61×10^{-6} in/in°F ($17,3 \times 10^{-6}$ mm/mm°C)

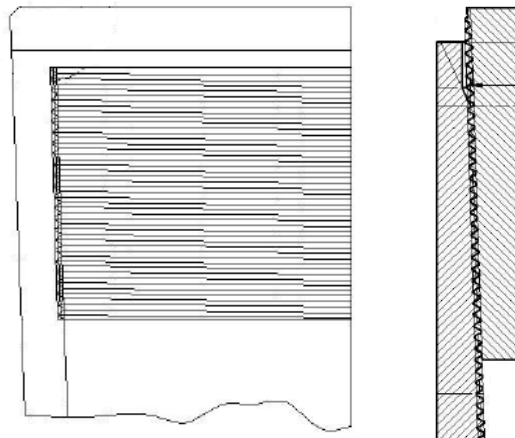
Accessories

Our GRE pipe range is accompanied by the most complete line of fittings on the market.

A variety of filament wound API 5B threaded fittings are available, please refer to the High Pressure Threaded Fittings Product Data sheet.

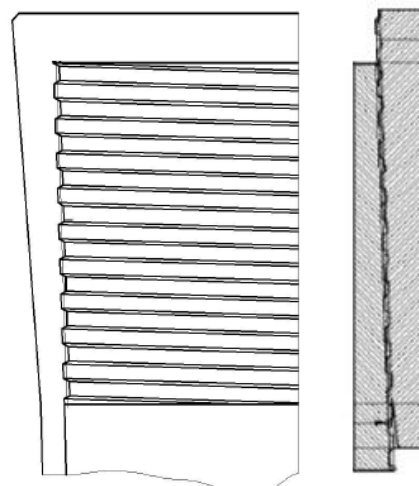
Joining System

API 5B 8rd Thread:



REPSA Fast Thread (RFT):

API 2 TPI AC (Alternative Connection)



API Threads

- Molded and machined threads for high performance applications.
- All 2 ³/₈" – 4 ¹/₂" 8rd API threads conform to API 5B Table 14, 16th Edition; 6 ⁵/₈" 8rd API thread conform to API 5B Table 7, 16th Edition.

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API 5B 8rd Thread ⁽¹⁾																			
Pipe	Thread	Joint Type	Pressure Range (psi)	NOMINAL PIPE DIMENSIONS										Minimum Bending Radius		Short Term Tensile Rating			
				Inside Diameter		Outside Diameter		Wall Thickness		Pipe Weight		Connection Diameter							
				In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs		
2"	2 3/8"	IJ	500	1.9	47,8	2.0	49,5	0.03	0,8	1.1	1,6	2.9	74,4	206	62,7	2211	1002		
			750			2.0	50,3	0.05	1,2	1.1	1,6	3.0	76,5	140	42,6	3183	1442		
			1000			2.0	51,3	0.07	1,7	1.1	1,7	3.1	78,5	107	32,6	4503	2040		
			1250			2.1	52,1	0.08	2,1	1.3	1,9	3.2	80,5	87	26,7	5510	2496		
			1500			2.1	53,1	0.10	2,5	1.3	1,9	3.3	82,6	75	22,8	6875	3114		
			1750			2.1	53,8	0.12	2,9	1.4	2,1	3.3	84,8	66	20,1	7917	3586		
			2000			2.2	54,6	0.13	3,4	1.5	2,2	3.4	87,1	120	36,6	8973	4065		
			2250			2.2	55,6	0.15	3,9	1.5	2,2	3.5	89,4	55	16,6	10405	4713		
			2500			2.2	56,6	0.17	4,3	1.6	2,4	3.6	91,9	49	14,8	11863	5374		
						TC	2750			2.3	57,4	0.19	4,8	1.7	2,6	3.7	94,5	46	14,1
			3000			2.3	58,4	0.21	5,3	1.7	2,6	3.8	97,0	44	13,5	14478	6558		
2,5"	2 7/8"	IJ	500	2.5	63,5	2.5	64,0	0.04	1,1	1.3	1,9	3.5	88,1	258	78,7	828	375		
			750			2.6	65,3	0.06	1,6	1.4	2,1	3.6	90,4	176	53,7	2927	1326		
			1000			2.6	66,3	0.09	2,2	1.5	2,3	3.7	93,0	136	41,3	4635	2100		
			1250			2.7	67,3	0.11	2,7	1.7	2,5	3.8	95,3	112	34,0	6371	2886		
			1500			2.7	68,6	0.13	3,3	1.7	2,5	3.9	97,8	96	29,3	8577	3885		
			1750			2.7	69,6	0.15	3,9	1.9	2,8	4.0	100,6	85	26,0	10371	4698		
			2000			2.8	70,9	0.18	4,4	2.0	3,0	4.1	103,1	78	23,7	12651	5731		
			2250			2.8	72,1	0.20	5,1	2.2	3,2	4.2	105,9	72	22,0	14973	6783		
							TC	2500	2.2	56,6	2.6	64,8	0.20	5,0	2.2	3,3	4.3	109,0	63
				2750	2.6	66,0		0.22			5,6	2.4	3,5	4.4	112,0	61	18,5	14738	6676
				3000	2.6	67,1		0.24			6,1	2.5	3,7	4.5	115,1	59	18,1	16466	7459
				3500	2.7	69,3		0.29			7,3	2.6	3,9	4.8	121,4	57	17,4	20452	9265

NOTE: Additional pressure classes are available on request.

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API 5B 8rd Thread ⁽¹⁾																	
Pipe	Thread	Joint Type	Pressure Range (psi)	NOMINAL PIPE DIMENSIONS										Minimum Bending Radius		Short Term Tensile Rating	
				Inside Diameter		Outside Diameter		Wall Thickness		Pipe Weight		Connection Diameter					
				In	mm	Lbs	Lbs	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs
3"	3 1/2"	IJ	500	3.4	85,1	3.5	87,6	0.06	1,4	1.5	2,2	4.2	105,7	347	105,6	5608	2540
			750	3.0	76,2	3.1	78,0	0.08	1,9	2.0	3,0	4.3	108,7	213	64,9	3504	1587
			1000			3.1	79,2	0.10	2,6	2.2	3,3	4.4	111,5	165	50,2	6056	2744
			1250			3.2	80,8	0.13	3,3	2.4	3,5	4.5	114,6	136	41,6	9174	4156
			1500			3.2	82,0	0.16	3,9	2.6	3,8	4.6	117,6	118	36,0	11817	5353
			1750			3.3	83,6	0.18	4,6	2.9	4,3	4.8	120,9	106	32,3	15043	6814
			2000			3.3	84,8	0.21	5,3	3.0	4,5	4.9	124,0	97	29,6	17777	8053
			2250			3.4	86,4	0.24	6,1	3.2	4,7	5.0	127,5	91	27,7	21112	9564
			2500			3.5	87,9	0.27	6,8	3.4	5,0	5.2	131,1	86	26,3	24506	11101
		2750	2.7	68,1	3.2	81,5	0.27	6,7	3.4	5,1	5.3	134,6	79	23,9	25744	11662	
		3000			3.3	82,8	0.29	7,4	3.6	5,4	5.4	138,2	77	23,5	28411	12870	
		3500			3.4	85,6	0.35	8,8	3.9	5,8	5.8	146,1	75	22,9	34426	15595	
		4"	4 1/2"	IJ	500	4.0	101,6	4.2	105,7	0.07	1,7	1.5	2,2	5.2	132,8	415	126,4
750	4.2				106,9			0.10	2,6	1.8	2,7	5.4	136,4	284	86,5	14218	6441
1000	4.3				109,5			0.14	3,5	2.1	3,1	5.5	140,2	220	66,9	21244	9624
1250	4.4				110,7			0.17	4,3	2.8	4,1	5.7	144,0	182	55,4	24819	11243
1500	4.4				112,3			0.21	5,3	3.0	4,4	5.8	147,8	157	48,0	29164	13211
1750	3.8				95,3	4.2	107,4	0.23	5,9	3.3	4,9	6.0	151,9	134	40,8	31588	14309
2000						4.3	110,0	0.27	6,8	3.6	5,4	6.1	156,0	123	37,5	38647	17507
2250						4.4	111,3	0.30	7,7	3.9	5,8	6.3	160,3	115	35,1	42239	19134
2500						4.5	114,0	0.34	8,6	4.4	6,6	6.5	164,6	110	33,4	50285	22779
2750	3.4			85,1	4.0	102,4	0.33	8,4	4.0	5,9	6.7	169,2	100	30,4	41385	18747	
3000					4.1	104,9	0.36	9,2	4.6	6,8	6.8	173,7	98	29,8	48114	21796	
3500					4.2	107,4	0.43	11,0	5.0	7,5	7.2	183,6	95	29,0	55009	24919	

NOTE: Additional pressure classes are available on request.

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API 5B 8rd Thread ⁽¹⁾																	
Pipe	Thread	Joint Type	Pressure Range (psi)	NOMINAL PIPE DIMENSIONS									Minimum Bending Radius		Short Term Tensile Rating		
				Inside Diameter		Outside Diameter		Wall Thickness		Pipe Weight		Connection Diameter					
				In	mm	Lbs	Lbs	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs
6"	6 5/8"	IJ	500	5.5	139,7	5.8	146,1	0.09	2,3	2.7	4,0	7.2	182,6	569	173,6	23194	10507
			750			5.9	148,6	0.14	3,6	3.6	5,3	7.4	187,7	389	118,7	32760	14840
			1000			6.0	151,4	0.19	4,8	4.1	6,1	7.6	192,8	300	91,5	43473	19693
			1250			6.1	153,9	0.24	6,0	5.0	7,4	7.8	198,1	248	75,6	53386	24184
			1500			6.1	155,2	0.29	7,3	5.8	8,7	8.0	203,5	214	65,2	58404	26457
			1750			6.2	158,0	0.34	8,6	6.7	10,0	8.2	209,0	190	58,0	69589	31524
			2000			6.3	160,5	0.39	9,9	7.6	11,3	8.5	214,6	173	52,8	79930	36208
			2250			6.4	163,6	0.44	11,2	8.9	13,3	8.7	220,5	161	49,0	92557	41929

NOTE: Additional pressure classes are available on request.

REPSA - Anhydride Line Pipe High Pressure API Design 65°C (150°F) Data Sheet

API AC 2 TPI Thread (Alternative Connection) ⁽¹⁾																	
Pipe	Thread	Joint Type	Pressure Range (psi)	NOMINAL PIPE DIMENSIONS										Minimum Bending Radius		Short Term Tensile Rating	
				Inside Diameter		Outside Diameter		Wall Thickness		Pipe Weight		Connection Diameter					
				In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs
6"	7"	IJ	500	6.2	157,2	6.5	164,8	0.10	2,6	2.8	4,2	7.6	193,8	637	194,1	31370	14211
			750			6.6	167,4	0.16	4,0	3.9	5,8	7.8	198,9	432	131,6	42157	19097
			1000			6.7	170,2	0.21	5,4	4.9	7,3	8.1	204,5	329	100,4	54213	24558
			1250	5.4	137,9	6.0	151,6	0.24	6,0	5.4	8,0	8.3	209,8	235	71,7	50767	22997
			1500			6.0	152,9	0.29	7,2	6.2	9,3	8.5	215,6	200	60,8	55710	25237
			1750			6.1	155,7	0.34	8,5	7.3	10,8	8.7	221,5	174	53,1	66732	30230
			2000			6.2	158,2	0.39	9,8	7.7	11,5	9.0	227,6	155	47,3	76925	34847
			2250			6.3	160,8	0.44	11,2	8.6	12,8	9.2	233,9	141	42,9	87283	39539
		TC	2500	6.4	163,6	0.49	12,5	9.6	14,3	9.5	240,3	129	39,4	98867	44787		
			3000	6.7	170,2	0.60	15,3	11.6	17,2	10.0	253,7	112	34,1	127041	57550		
8"	9"	IJ	500	8.0	203,2	8.2	207,5	0.13	3,4	4.6	6,9	9.8	249,9	823	250,7	22669	10269
			750			8.3	211,6	0.20	5,1	6.6	9,8	10.1	256,8	558	170,0	44441	20132
			1000	7.5	190,5	8.0	203,7	0.26	6,5	7.8	11,6	10.4	263,9	399	121,7	66554	30149
			1250			8.2	207,8	0.32	8,2	9.1	13,5	10.7	271,0	325	99,1	87929	39832
			1500			8.3	210,3	0.39	9,9	10.9	16,2	11.0	278,4	276	84,1	101503	45981
			1750			8.4	214,4	0.46	11,6	12.2	18,1	11.3	286,0	241	73,4	123565	55975
			2000			8.6	217,7	0.53	13,4	14.1	21,0	11.8	298,5	215	65,5	141801	64236
			9 1/4"	2250	8.7	221,7	0.60	15,2	15.5	23,0	12.1	306,6	195	59,3	164628	74576	
	TC	2500		8.8	224,5	0.67	17,0	17.0	24,6	24.6	624,8	179	54,5	180566	81796		

NOTE: Additional pressure classes are available on request.

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API AC 2 TPI Thread (Alternative Connection) ⁽¹⁾																	
Pipe	Thread	Joint Type	Pressure Range (psi)	NOMINAL PIPE DIMENSIONS										Minimum Bending Radius		Short Term Tensile Rating	
				Inside Diameter		Outside Diameter		Wall Thickness		Pipe Weight		Connection Diameter					
				In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs
10"	11 1/2"	IJ	500	10.5	267,2	10.9	276,9	0.18	4,5	8.1	12,1	12.6	319,0	1082	329,9	67125	30407
			750			11.1	282,2	0.27	6,8	10.6	15,8	12.9	327,7	734	223,7	105242	47674
	11 5/8"		1000	10.0	253,0	10.7	270,5	0.34	8,6	13.2	19,7	13.4	340,9	530	161,6	117275	53126
			1250			10.9	275,8	0.43	10,8	15.6	23,2	13.8	350,0	432	131,6	154526	70000
			1500			11.0	279,7	0.52	13,1	18.1	26,9	14.2	359,7	366	111,7	181580	82256
			2000			11.4	288,8	0.70	17,8	22.8	33,9	15.0	379,7	285	86,9	248021	112354
12"	13 1/4"	IJ	500	11.8	299,0	12.1	307,8	0.20	5,0	9.9	14,7	14.2	361,4	1211	369,2	68955	31236
			750			12.3	312,9	0.30	7,6	13.0	19,4	14.6	371,3	821	250,4	109264	49497
			1000			12.5	318,3	0.40	10,2	17.3	25,7	15.0	381,5	627	191,1	152300	68992
			1250			12.7	323,6	0.51	12,9	20.5	30,5	15.4	391,9	511	155,7	196062	88816
			1500			12,9	328,4	0.61	15,6	24,7	36,8	15.9	402,8	433	132,1	236284	107037
14"	15"	IJ	500	13.8	350,5	14.28	362,7	0.24	6,1	14.7	21,9	21.9	556,3	1419	432,6	111152	50352
			800			14.55	369,6	0.38	9,5	20.5	30,5	30.5	774,7	905	276,0	175345	79431
			1000			14.74	374,4	0.47	11,9	23.9	35,6	35.6	904,2	734	223,8	221239	100221
			1500			15.23	386,8	0.72	18,2	34.4	51,2	51.2	1300,5	507	154,6	342344	155082
16"	17 1/2"	IJ	500	15.3	388,6	15.8	401,8	0.25	6,5	17.7	26,3	18.9	479,8	1574	479,7	133451	60453
			800			16.1	409,7	0.41	10,4	23.1	34,4	19.5	495,6	1004	306,0	215130	97454
			1000			16.3	415,0	0.52	13,1	29.2	43,5	19.9	506,5	814	248,2	271362	122927
			1500			16.9	428,8	0.79	20,0	38.8	57,8	21,1	534,7	563	171,5	419298	189942

NOTE: Additional pressure classes are available on request.

⁽¹⁾ Based on minimum wall thickness dimensions and API 15HR Edition 4, for a 20 year life expectancy. API Monogrammed pipe available on request.

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Joining System Information

Pipe Size - Inches	Thread Size - Inches	Pin Upset O.D.		Thread Length		Make Up Length Loss	
		In	mm	In	mm	In	mm
API 8rd Thread							
2	2 3/8	2.6	66,0	2.6	65,1	3.1	77,8
2,5	2 7/8	3.1	78,7	2.9	73,0	3.4	85,7
3	3 1/2	3.8	95,3	3.1	79,4	3.6	92,1
4	4 1/2	4.8	120,7	3.5	88,9	4.0	101,6
6	6 5/8	6.7	170,2	3.9	98,4	4.4	111,1

API CONNECTIONS - All products are produced integral joint unless indicated (TC) Threaded and Coupled. All 2 3/8" – 4 1/2" 8rd API threads conform to API 5B Table 14, 16th Edition; 6 5/8" 8rd API thread conform to API 5B Table 7, 16th Edition.

API AC 2 TPI Thread (Alternative Connection)							
6	7	7.1	179,1	4.0	101,6	5.2	133,1
8	9	9.1	229,9	4.5	114,3	6.0	152,4
	9 1/4	9.2	233,9	7.0	177,5	8.4	214,2
	10	10.4	262,9	6.9	174,9	8.1	206,8
10	11 1/2	11.7	297,2	5.9	151,0	6.6	166,9
	11 5/8	12.0	303,5	8.5	215,9	9.5	241,3
12	13 1/4	13.2	335,3	6.6	168,0	7.6	193,4
14	16	16.2	410,2	10.0	254,0	11.1	282,6
16	17 1/2	17.7	450,0	9.5	241,3	10.5	266,7

API CONNECTIONS - All products are produced integral joint unless indicated (TC) Threaded and Coupled. REPSA Fast Thread (RFT) 2 TPI Alternative Connection (AC) conforms to API 15 HR section 6.3.3 *Alternative Pipe Connections*.

Performance Ratings

ASTM D 2992-B	Performance Ratings	
	PSI	(MPa)
20 Year Life, LTHS (Long term hydrostatic stress)	27700	190,98
20 Year Life, LCL (Lower Confidence Limit)	22977	158,42

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Pipe Capacity

Size Pipe	Inside Diameter		Capacity	
	in	mm	Bbls/1,000 ft.	m3/km
API 5B 8rd Thread				
2 3/8	1.9	47,8	3.9	2,0
2 7/8	2.5	63,5	6.1	3,2
	2.2	56,6	4.8	2,5
3 1/2	3.4	85,1	10.9	5,7
	3.0	76,2	8.7	4,6
	2.7	68,1	7.0	3,6
4 1/2	4.0	101,6	15.5	8,1
	3.8	95,3	13.7	7,1
	3.4	85,1	10.9	5,7
6 5/8	5.5	139,7	29.4	15,3
	5.4	137,9	28.6	14,9
API AC 2 TPI Thread (Alternative Connection)				
7	6.2	157,2	37.2	19,4
	5.4	137,9	28.6	14,9
9	8.0	203,2	62.2	32,4
	7.5	190,5	54.6	28,5
9 1/4	7.5	190,5	54.6	28,5
10				
11 1/2	10.5	267,2	107.5	56,1
11 5/8	10.0	253,0	96.4	50,3
13 1/4	11.8	299,0	134.6	70,2
16	13.8	350,5	185.0	96,5
17 1/2	15.3	388,6	227.4	118,6