



欧森科技
OCEAN TECHNOLOGY

2024

High Pressure Pipe, Chemical Pipe, LNG Pipe

Product Data Book



CORPORATE CULTURE

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Product Data

Glass-fiber Reinforced Epoxy Pipe System

Introduction of High Pressure Fiberglass Pipe High Pressure Fiberglass Pipe System

The high pressure fiberglass pipe is a new product which is designed and developed with the combination of the low pressure pipe and the actual application in oilfield by Ocean Technology.

The product is made of the high strength fiberglass and epoxy resin by winding technology.

● Diameter range:

38mm-200mm (1.5" - 8")

● Working pressure range:

3.5MPa-25MPa

● The highest working temperature:

100°C

● Products characteristic:

◇ Excellent high-pressure resistant, corrosion resistant properties and has long service life.

◇ Light weight suits the convenience of transportation and installation.

◇ The thread joint makes good sealing property.

◇ Small friction coefficient, no dirt deposition inside pipe, excellent hydraulic characteristics.

● Applications):

◇ Salt or fresh water supply lines

◇ Waste water lines

◇ Firewater lines

◇ Crude oil and natural gas lines

◇ Petroleum chemical lines

◇ Pipeline connected to the tank or other systems

◇ Oil gathering line

◇ Mixed water line

◇ Desalted water equipment

● Connection Type and Product Standard:

◆ Fittings Matches Pipe

The Ocean Technology high pressure GRE pipe and fittings are all connected by threads. The size and the pressure of the fittings are matched with the pipe's. Meanwhile, the fittings are manufactured by winding process.



◆ Connection Type

◇ API 8 RND thread or API 10 RND thread.

◇ Special sealant for joint.

● Manufacture and acceptance standard:

◇ API 15HR,API 15LR Specification for High/Low Pressure Fiberglass Line Pipe and Fittings Standard.

◇ SY/T 6267-2006 China petrol and Natural Gas Profession standard.



● Quality guarantee:

◆ Raw material

The fiberglass materials for the high-pressure pipe and fittings are PPG fiberglass and OC fiberglass products. The epoxy resins are DOW product or other domestic larger enterprise products.

◆ Production Process Control System

The process of manufacturing the high-pressure pipe is controlled by the Hi-tech automatic filament-wound production lines and followed the ISO 9001 standard. Reducing the influence of artificial factors on the product quality.



◆ Inspection Control System

Each pipe need to be done the hydrostatic pressure test, so that each pipe can be qualified before entering the market.



● Remarks:

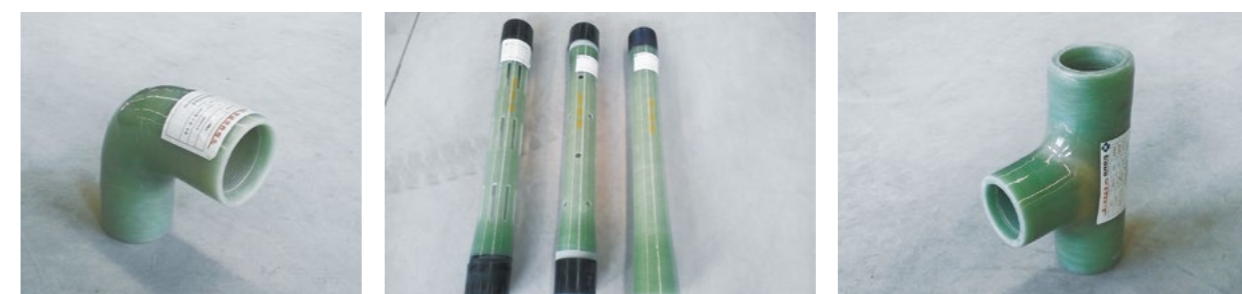
OCEAN TECHNOLOGY retains the right to revise the product data and the graphs. This manual is a just general introduction, which does not mean any guarantee.

The High-Pressure Pipe Performance

Epoxy resin pipe system	Blue pipe	Red pipe
RTRP (Reinforced thermosetting resin pipe),classified according to ASTM D2310	RTRP-11AX	RTRP-11AF
Diameter range	38-200mm	38-200mm
Circulating pressure Mpa	5.5-27.6	5.5-24.2
Cruing system	Acid anhydride cured epoxy pipe	Amine cured epoxy pipe
The highest working temperature ℃	80℃	100℃
Thickness of inner liner	No inner liner	No inner liner
Connection method	API 8 RND thread	API 8 RND thread
Application	Transporting crude oil, natural gas, injecting water or gathering oil; salt water or fresh water, CO2	

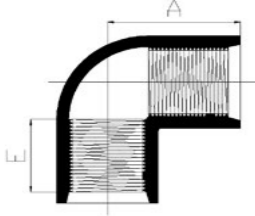
Diameter and Pressure

Diameter	Pressure	Diameter	Pressure	Diameter	Pressure
1.5" (40mm)	3.5MPa	1.5" (40mm)	8.5MPa	1.5" (40mm)	17MPa
2" (50mm)		2" (50mm)		2" (50mm)	
2.5" (65mm)		2.5" (65mm)		2.5" (65mm)	
3" (80mm)		3" (80mm)		3" (80mm)	
4" (100mm)		4" (100mm)		4" (100mm)	
6" (150mm)		6" (150mm)		6" (150mm)	
8" (200mm)		8" (200mm)		8" (200mm)	21MPa
1.5" (40mm)		5.5MPa		1.5" (40mm)	
2" (50mm)	2" (50mm)		2" (50mm)		
2.5" (65mm)	2.5" (65mm)		2.5" (65mm)		
3" (80mm)	3" (80mm)		3" (80mm)		
4" (100mm)	4" (100mm)		4" (100mm)		
6" (150mm)	6" (150mm)		6" (150mm)		
8" (200mm)	8" (200mm)		8" (200mm)		
1.5" (40mm)	7MPa		1.5" (40mm)	14MPa	1.5" (40mm)
2" (50mm)		2" (50mm)	2" (50mm)		
2.5" (65mm)		2.5" (65mm)	2.5" (65mm)		
3" (80mm)		3" (80mm)	3" (80mm)		
4" (100mm)		4" (100mm)	4" (100mm)		
6" (150mm)		6" (150mm)	6" (150mm)		
8" (200mm)		8" (200mm)	8" (200mm)		



ELBOW

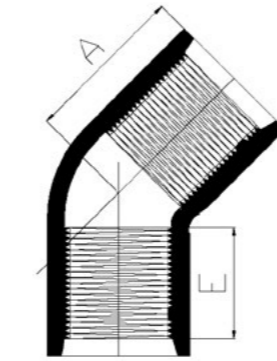
90 ° Elbow



Inside thread standard: API SPEC 5B

Diameter		Pressure (MPa)	A		E	
(in)	(mm)		(in)	(mm)	(in)	(mm)
1 1/2	40	7	4.50	114.3	2.25	57.2
1 1/2		8.5~14	4.50	114.3	2.25	57.2
1 1/2		17	4.50	114.3	2.25	57.2
1 1/2		18~20	4.50	114.3	2.25	57.2
1 1/2		22~25	4.50	114.3	2.25	57.2
2	50	7	5.00	127.0	2.69	68.3
2		8.5	5.00	127.0	2.69	68.3
2		10~14	5.00	127.0	2.69	68.3
2		17	5.00	127.0	2.69	68.3
2		18~20	5.00	127.0	2.69	68.3
2	22~25	5.00	127.0	2.69	68.3	
2 1/2	65	7	5.75	146.1	3.00	76.2
2 1/2		8.5	5.75	146.1	3.00	76.2
2 1/2		10~14	5.75	146.1	3.00	76.2
2 1/2		17	5.75	146.1	3.00	76.2
2 1/2		18~20	5.75	146.1	3.00	76.2
2 1/2	22~25	5.75	146.1	3.00	76.2	
3	80	7	6.50	165.1	3.25	82.6
3		8.5	6.50	165.1	3.25	82.6
3		10~14	6.50	165.1	3.25	82.6
3		17	6.50	165.1	3.25	82.6
3		18~20	6.50	165.1	3.25	82.6
3	22~25	6.50	165.1	3.25	82.6	
4	100	7	8.00	203.2	4.13	104.9
4		8.5	8.00	203.2	4.13	104.9
4		10~14	8.00	203.2	4.13	104.9
4		17	8.00	203.2	4.13	104.9
4		18~20	8.00	203.2	4.13	104.9
4	22~25	8.00	203.2	4.13	104.9	
6	150	5.5	9.75	247.7	4.00	101.6
6		8.5	9.75	247.7	4.00	101.6
6		10	9.75	247.7	4.00	101.6
6		12~14	9.75	247.7	4.63	117.6
6		17	9.75	247.7	4.63	117.6
8(8 5/8)	200	5.5	9.00	228.6	4.50	114.3
8(8 5/8)		8.5	9.00	228.6	4.50	114.3
8(8 5/8)		10	9.00	228.6	4.50	114.3
8(9 5/8)		10	11.00	279.4	4.88	124.0
8(9 5/8)		12~14	11.00	279.4	4.88	124.0

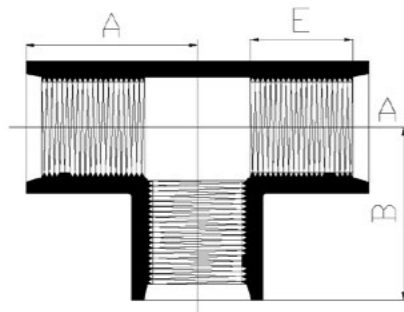
45 ° Elbow



Inside thread standard: API SPEC 5B

Diameter		Pressure (MPa)	A		E	
(in)	(mm)		(in)	(mm)	(in)	(mm)
1 1/2	40	7	3.125	79.4	2.25	57.2
1 1/2		8.5~14	3.125	79.4	2.25	57.2
1 1/2		17	3.125	79.4	2.25	57.2
1 1/2		18~20	3.125	79.4	2.25	57.2
1 1/2		22~25	3.125	79.4	2.25	57.2
2	50	7	4.250	108.0	2.69	68.3
2		8.5	4.250	108.0	2.69	68.3
2		10~14	4.250	108.0	2.69	68.3
2		17	4.250	108.0	2.69	68.3
2		18~20	4.250	108.0	2.69	68.3
2	22~25	4.250	108.0	2.69	68.3	
2 1/2	65	7	4.625	117.5	3.00	76.2
2 1/2		8.5	4.625	117.5	3.00	76.2
2 1/2		10~14	4.625	117.5	3.00	76.2
2 1/2		17	4.625	117.5	3.00	76.2
2 1/2		18~20	4.625	117.5	3.00	76.2
2 1/2	22~25	4.625	117.5	3.00	76.2	
3	80	7	5.500	139.7	3.25	82.6
3		8.5	5.500	139.7	3.25	82.6
3		10~14	5.500	139.7	3.25	82.6
3		17	5.500	139.7	3.25	82.6
3		18~20	5.500	139.7	3.25	82.6
3	22~25	5.500	139.7	3.25	82.6	
4	100	7	6.000	152.4	4.13	104.9
4		8.5	6.000	152.4	4.13	104.9
4		10~14	6.000	152.4	4.13	104.9
4		17	6.000	152.4	4.13	104.9
4		18~20	6.000	152.4	4.13	104.9
4	22~25	6.000	152.4	4.13	104.9	
6	150	5.5	7.625	193.7	4.00	101.6
6		8.5	7.625	193.7	4.00	101.6
6		10	7.625	193.7	4.00	101.6
6		12~14	7.625	193.7	4.63	117.6
6		17	7.625	193.7	4.63	117.6
8(8 5/8)	200	5.5	7.250	184.2	4.50	114.3
8(8 5/8)		8.5	7.250	184.2	4.50	114.3
8(8 5/8)		10	7.250	184.2	4.50	114.3
8(9 5/8)		10	7.375	187.3	4.88	124.0
8(9 5/8)		12~14	7.375	187.3	4.88	124.0

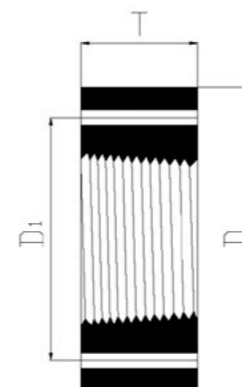
TEE



Inside thread standard: API SPEC 5B

Diameter		Pressure (MPa)	A		B		E	
(in)	(mm)		(in)	(mm)	(in)	(mm)	(in)	(mm)
1 1/2	40	7~14	4.375	111.1	4.875	123.8	2.25	57.2
1 1/2		17	4.375	111.1	4.875	123.8	2.25	57.2
1 1/2		18~20	4.375	111.1	4.875	123.8	2.25	57.2
1 1/2		22~25	4.375	111.1	4.875	123.8	2.25	57.2
2	50	8.5	5.250	133.4	5.75	146.1	2.69	68.3
2		12~14	5.250	133.4	5.75	146.1	2.69	68.3
2		17	5.250	133.4	5.75	146.1	2.69	68.3
2		18~20	5.250	133.4	5.75	146.1	2.69	68.3
2		22~25	5.250	133.4	5.75	146.1	2.69	68.3
2 1/2	65	5.5~8.5	5.750	146.1	6.50	165.1	3.00	76.2
2 1/2		10	5.750	146.1	6.50	165.1	3.00	76.2
2 1/2		12~17	5.750	146.1	6.50	165.1	3.00	76.2
2 1/2		18~20	5.750	146.1	6.50	165.1	3.00	76.2
2 1/2		22~25	5.750	146.1	6.50	165.1	3.00	76.2
3		80	3.5~8.5	6.50	165.1	7.25	184.2	3.25
3	12~14		6.50	165.1	7.25	184.2	3.25	82.6
3	17		6.50	165.1	7.25	184.2	3.25	82.6
3	18~20		6.50	165.1	7.25	184.2	3.25	82.6
3	22~25		6.50	165.1	7.25	184.2	3.25	82.6
4	100	3.5~8.5	7.25	184.2	8.25	209.6	4.13	104.9
4		12~14	7.25	184.2	8.25	209.6	4.13	104.9
4		17	7.25	184.2	8.25	209.6	4.13	104.9
4		18~20	7.25	184.2	8.25	209.6	4.13	104.9
4		22~25	7.25	184.2	8.25	209.6	4.13	104.9
6	150	3.5~5.5	9.75	247.7	10.5	266.7	4.63	117.6
6		8.5	9.75	247.7	10.5	266.7	4.63	117.6
6		12~14	9.75	247.7	10.5	266.7	4.63	117.6
6		17	9.75	247.7	10.5	266.7	4.63	117.6
8(8 5/8)	200	3.5~5.5	10.00	254.0	11.0	279.4	4.50	114.3
8(8 5/8)		7~8.5	10.00	254.0	11.0	279.4	4.50	114.3
8(8 5/8)		10	10.00	254.0	11.0	279.4	4.50	114.3
8(9 5/8)		10	10.50	266.7	13.0	330.2	4.88	124.0
8(9 5/8)		12~14	10.50	266.7	13.0	330.2	4.88	124.0
8(9 5/8)		17	10.50	266.7	13.0	330.2	4.88	124.0

FLANGE

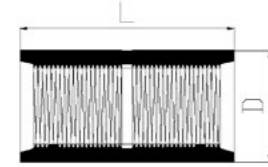


Inside thread standard: API SPEC 5B

Diameter		Pressure (MPa)	(ANSI)	D ₁		Bolt hole Qty	Size of bolt hole		D		T	
(in)	(mm)			(in)	(mm)		(in)	(mm)	(in)	(mm)	(in)	(mm)
1 1/2	40	7~10	600	4.50	114.3	4	7/8	22	6.125	155.6	2.56	65.0
1 1/2		12~25	1500	4.875	123.8	4	1 1/8	29	7.00	177.8	2.56	65.0
2	50	5.5~10	600	5.00	127.0	8	3/4	19	6.50	165.1	3.06	77.7
2		12~25	1500	6.50	165.1	8	1.0	25	8.50	215.9	3.06	77.7
2 1/2	65	5.5~10	600	5.875	149.2	8	7/8	22	7.50	190.5	3.38	85.9
2 1/2		12~25	1500	7.50	190.5	8	1 1/8	29	9.625	244.5	3.38	85.9
3	80	3.5~10	600	6.625	168.3	8	7/8	22	8.25	209.6	3.63	92.2
3		12~14	900	7.50	190.5	8	1.0	25	9.50	241.3	3.63	92.2
3		17~25	1500	8.00	203.2	8	1 1/4	32	10.50	266.7	3.63	92.2
4	100	3.5	300	7.875	200.0	8	7/8	22	10.00	254.0	4.50	114.3
4		5.5~10	600	8.50	215.9	8	1.0	25	10.75	273.1	4.50	114.3
4		12~14	900	9.25	235.0	8	1 1/4	32	11.50	292.1	4.50	114.3
4*		17~25	1500	9.50	241.3	8	1 3/8	35	12.25	311.2	4.50	114.3
6	150	3.5	300	10.625	269.9	12	7/8	22	12.50	317.5	5.00	127.0
6		5.5~10	600	11.50	292.1	12	1 1/8	28.6	14.00	355.6	5.00	127.0
6*		12~14	900	12.50	317.5	12	1 1/4	32	15.00	381.0	5.00	127.0
6		17	1500	12.50	317.5	12	1 1/2	38	15.50	393.7	5.00	127.0
8(8 5/8)	200	3.5	300	13.00	330.2	12	1.0	25	15.00	381.0	5.00	127.0
8(8 5/8)		5.5~10	600	13.75	349.3	12	1 1/4	32	16.50	419.1	5.00	127.0
8(9 5/8)		3.5	300	13.00	330.2	12	1.0	25	15.00	381.0	5.25	133.4
8(9 5/8)		10	600	13.75	349.3	12	1 3/4	32	16.50	419.1	5.25	133.4
8(9 5/8)*		12~14	900	15.50	393.7	12	1 1/2	38	18.50	469.9	5.25	133.4
8(9 5/8)		17	1500	15.50	393.7	12	1 1/2	38	18.50	469.9	5.25	133.4

* Those flanges should be added with the steel back, isolating ring and metal gasket.

COUPLING

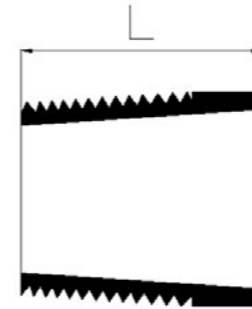


Inside thread standard: API SPEC 5B

Diameter		Pressure (MPa)	Length of Coupling L		OD of Coupling D	
(in)	(mm)		(in)	(mm)	(in)	(mm)
1 1/2	40	12~14	5.125	130.2	2.80	71.1
1 1/2		17	5.125	130.2	2.90	73.7
1 1/2		20	5.125	130.2	3.05	77.5
1 1/2		22	5.125	130.2	3.15	80.0
1 1/2		25	5.125	130.2	3.30	83.8
2	50	10	6.126	155.6	3.25	82.6
2		12~14	6.126	155.6	3.40	86.4
2		17	6.126	155.6	3.60	91.4
2		20	6.126	155.6	3.70	94.0
2		22	6.126	155.6	3.90	99.1
2	65	25	6.126	155.6	4.10	104.1
2 1/2		10	6.750	171.5	3.80	96.5
2 1/2		12~14	6.750	171.5	4.00	101.6
2 1/2		17	6.750	171.5	4.20	106.7
2 1/2		20	6.750	171.5	4.40	111.8
2 1/2	80	22	6.750	171.5	4.60	116.8
2 1/2		25	6.750	171.5	4.80	121.9
3		10	7.250	184.2	4.60	116.8
3		12~14	7.250	184.2	4.80	121.9
3		17	7.250	184.2	5.10	129.5
3	100	20	7.250	184.2	5.25	133.4
3		22	7.250	184.2	5.50	139.7
3		25	7.250	184.2	5.75	146.1
4		10	9.000	228.6	5.80	147.3
4		12~14	9.000	228.6	6.10	154.9
4	150	17	9.000	228.6	6.40	162.6
4		20	9.000	228.6	6.70	170.2
4		22	9.000	228.6	7.00	177.8
4		25	9.000	228.6	7.20	182.9
6		200	5.5	10.00	254.0	7.85
6	7		10.00	254.0	8.00	203.2
6	8.5		10.00	254.0	8.20	208.3
6	10		10.00	254.0	8.40	213.4
6	12~14		10.00	254.0	8.75	222.3
6	200	17	10.00	254.0	9.20	233.7
8 (8 5/8)		5.5	10.00	254.0	9.50	241.3
8 (8 5/8)		7	10.00	254.0	9.70	246.4
8 (8 5/8)		8.5	10.00	254.0	10.00	254.0
8 (8 5/8)		10	10.00	254.0	10.20	259.1
8 (9 5/8)		5.5	10.50	266.7	10.70	271.8
8 (9 5/8)		7	10.50	266.7	10.90	276.9
8 (9 5/8)		8.5	10.50	266.7	11.10	281.9
8 (9 5/8)		10	10.50	266.7	11.50	292.1
8 (9 5/8)		12~14	10.50	266.7	11.90	302.3

THREAD FOR REPAIR

Thread for repair

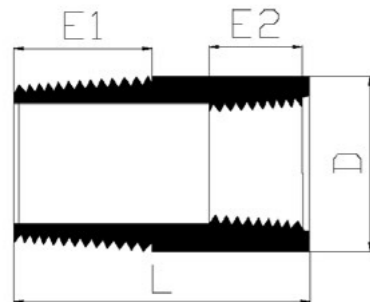


Inside thread standard: API SPEC 5B

Diameter		Type	Length L	
(in)	(mm)		(in)	(mm)
1 1/2	40	A	3.0	76
1 1/2		B	3.0	76
1 1/2		C	3.0	76
1 1/2		D1	3.0	76
1 1/2		D	3.0	76
1 1/2		E	3.0	76
1 1/2	F	3.0	76	
2	50	A	3.8	95
2		B	3.5	95
2		B1	3.5	95
2		C	3.5	95
2		C1	3.5	95
2		D1	3.5	95
2	65	D	3.5	95
2 1/2		A	4.0	102
2 1/2		B	4.0	102
2 1/2		B1	4.0	102
2 1/2		C	4.0	102
2 1/2		C1	4.0	102
2 1/2	80	D1	4.0	102
2 1/2		D	4.0	102
3		A	4.3	108
3		B	4.3	108
3		C	4.3	108
3		C2	4.3	108
3	100	C1	4.3	108
3		D	4.3	108
3		D1	4.3	108
3		E2	4.3	108
3		E	4.3	108
3		E1	4.3	108
3	150	F	4.3	108
4		A	4.4	110
4		B	4.4	110
4		B1	4.4	110
4		C	4.4	110
4		C1	4.4	110
4	200	D	4.4	110
4		D1	4.4	110
4		D3	4.4	110
4		E	4.4	110
4		D2	4.4	110
4		F	4.4	110
6	150	A	4.3	108
6		B	4.3	108
6		B1	4.3	108
6		C	4.3	108
6		C1	4.3	108
6		D	4.3	108
6	200	D1	4.3	108
6		E	4.3	108
6		E1	4.3	108
6		F	4.3	108
8		A	5.6	142
8		B	5.6	142
8	C	5.6	142	
8		D	5.6	142
8	E	5.6	142	
8		F	5.6	142
8	G	5.6	142	
8		H	5.6	142

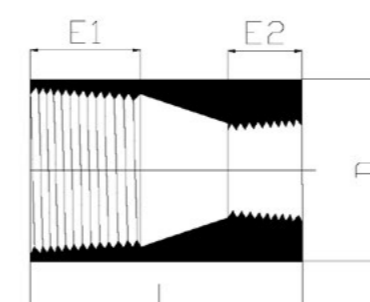
Diameter		Pressure (MPa)	Type
(in)	(mm)		
3	80	3.5	C
4	100	3.5	C
6	150	3.5	B1
8	200	3.5	H
2	50	5.5	B1
2.5	65	5.5	C1
3	80	5.5	C
4	100	5.5	C
6	150	5.5	C1
1 1/2	40	7	F
2	50	7	B1
2 1/2	65	7	C1
3	80	7	C
4	100	7	C,B1
6	150	7	C
8	200	7	F
1 1/2	40	8.5	F
2	50	8.5	B1
2 1/2	65	8.5	C1
3	80	8.5	C
4	100	8.5	B
6	150	8.5	B1
8	200	8.5	E
1 1/2	40	10	F
2	50	10	D1
2 1/2	65	10	C1
3	80	10	D,D1
4	100	10	C
6	150	10	E1
8	200	10	D
1 1/2	40	12	F
2	50	12	D1
2 1/2	65	12	C
3	80	12	C1
4	100	12	B1
6	150	12	E
8	200	12	C
1 1/2	40	14	F
2	50	14	C1
2 1/2	65	14	B1
3	80	14	C2
4	100	14	D
6	150	14	F
8	200	14	B
1 1/2	40	17	E
2	50	17	C1
2 1/2	65	17	D
3	80	17	E,E1
4	100	17	F
6	150	17	D1
1 1/2	40	18	E
2	50	18	C,C1
2 1/2	65	18	D1
3	80	18	E2,D1
4	100	18	D2
1 1/2	40	20	D
2	50	20	C1
2 1/2	65	20	C1
3	80	20	D1,D
4	100	20	E
1 1/2	40	22	D1
2	50	22	C,C1
2 1/2	65	22	C,B1
3	80	22	C1
4	100	22	D3
1 1/2	40	25	C
2	50	25	B1,B
2 1/2	65	25	B
3	80	25	C

All kind of threads are used for the pipe. Eg. Type A thread can be used as outside thread or end thicker part.

REDUCER WITH OUTSIDE AND INSIDE THREADS


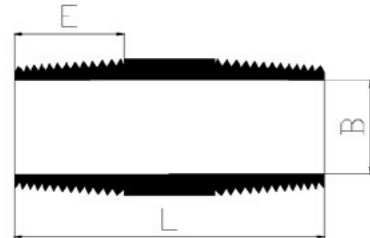
Diameter		Pressure (MPa)	D		E ₁		E ₂		L	
(in)	(mm)		(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
2×1 ¹ / ₂	50×40	25	2.6	66	2.7	68	2.4	61	7.0	178
2 ¹ / ₂ ×1 ¹ / ₂	65×40	25	3.1	78.7	3.00	76.2	2.11	53.6	9.0	229
2 ¹ / ₂ ×2	65×50	25	3.25	82.6	3.25	82.6	2.69	68.3	9.0	229
3×1 ¹ / ₂	80×40	25	3.75	95.3	3.25	82.6	2.11	53.6	9.0	229
3×2	80×50	25	3.75	95.3	3.25	82.6	2.69	68.3	9.0	229
3×2 ¹ / ₂	80×65	25	3.88	98.6	3.50	88.9	3.00	76.2	10.0	254
4×2	100×50	25	4.80	121.9	4.13	104.9	2.69	68.3	10.0	254
4×2 ¹ / ₂	100×65	25	4.80	121.9	4.13	104.9	3.00	76.2	10.0	254
4×3	100×80	25	4.88	124.0	3.75	95.3	3.25	82.6	11.0	279
6×4	150×100	17	7.05	179.1	4.63	117.6	4.13	104.9	11.0	279
8(8 ⁵ / ₈)	200	14	9.65	245.1	4.88	124.0	3.25	82.6	12.0	305

Inside thread standard: API SPEC 5B

REDUCER WITH BOTH INSIDE THREADS


Diameter		Pressure (MPa)	D		E ₁		E ₂		L	
(in)	(mm)		(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
2×1 ¹ / ₂	50×40	25	4.25	108.0	2.69	68.3	2.11	53.6	6.625	168.3
2 ¹ / ₂ ×1 ¹ / ₂	65×40	25	5.25	133.4	3.00	76.2	2.11	53.6	6.80	172.7
2 ¹ / ₂ ×2	65×50	25	5.25	133.4	3.00	76.2	2.69	68.3	6.80	172.7
3×1 ¹ / ₂	80×40	25	6.00	152.4	3.25	82.6	2.11	53.6	8.00	203.2
3×2	80×50	25	6.00	152.4	3.25	82.6	2.69	68.3	8.00	203.2
3×2 ¹ / ₂	80×65	25	6.00	152.4	3.25	82.6	3.00	76.2	8.00	203.2
4×1 ¹ / ₂	100×40	22	7.45	189.2	4.13	104.9	2.11	53.6	10.125	257.2
4×2	100×50	22	7.45	189.2	4.13	104.9	2.69	68.3	10.125	257.2
4×2 ¹ / ₂	100×65	22	7.45	189.2	4.13	104.9	3.00	76.2	10.125	257.2
4×3	100×80	25	7.45	189.2	4.13	104.9	3.25	82.6	10.125	257.2
6×4	150×100	17	9.50	241.3	4.63	117.6	4.13	104.9	15.00	381.0
8(8 ⁵ / ₈)×4	200×100	10	10.30	261.6	4.50	114.3	4.13	104.9	15.00	381.0
8(8 ⁵ / ₈)×6	200×150	10	10.30	261.6	4.50	114.3	4.63	117.6	15.00	381.0
8(9 ⁵ / ₈)×4	200×100	12~14	12.20	309.9	4.88	124.0	4.13	104.9	15.00	381.0
8(9 ⁵ / ₈)×6	200×150	12~14	12.20	309.9	4.88	124.0	4.63	117.6	15.00	381.0

Inside thread standard: API SPEC 5B

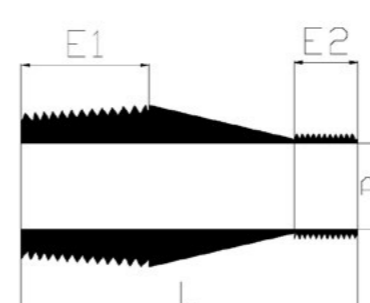
NIPPLE


Diameter		Pressure (MPa)	Standard length L (mm)	Thread length E		ID B	
(in)	(mm)			(in)	(mm)	(in)	(mm)
1 ¹ / ₂	40	7~25	400	2.25	57.2	1.50	38.1
2	50	5.5~8.5	400	2.69	68.3	2.16	54.9
2		10~25	400	2.69	68.3	1.95	49.5
2 ¹ / ₂	65	5.5~14	400	3.00	76.2	2.43	61.7
2 ¹ / ₂		17~25	400	3.00	76.2	2.43	56.6
3	80	3.5~8.5	400	3.00	76.2	3.19	81.0
3		10~14	400	3.00	76.2	3.00	76.2
3		17~25	400	3.25	82.6	2.72	69.1
4	100	3.5~8.5	400	4.13	104.9	4.15	105.4
4		10~12	400	4.13	104.9	4.00	101.6
4		14	400	4.13	104.9	3.75	95.3
4		17~22	400	4.13	104.9	3.35	85.1
6	150	3.5	400	4.63	117.6	6.43	163.1
6		5.5~8.5	400	4.63	117.6	6.19	157.3
6		10~17	400	4.63	117.6	5.43	137.9
8	200	3.5~10	400	4.63	117.6	7.50	190.5
8(9 ⁵ / ₈)		12~14	400	4.88	124.0	7.50	190.5

Outside thread standard: API SPEC 5B

We have different sizes and pressures of the nipples.

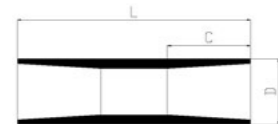
The standard length of the nipple is 400mm, other length of nipple can be also obtained.

REDUCER WITH OUTSIDE THREADS


Diameter		Pressure (MPa)	D		E ₁		E ₂		L	
(in)	(mm)		(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
		17	1.50	38.1	2.69	68.3	2.11	53.6	12.00	304.8
		25	1.50	38.1	3.00	76.2	2.11	53.6	12.00	304.8
		25	1.95	49.5	3.00	76.2	2.69	68.3	12.00	304.8
3×1 ¹ / ₂	80×40	25	1.50	38.1	3.25	82.6	2.11	53.6	12.00	304.8
3×2	80×50	25	1.95	49.5	3.25	82.6	2.69	68.3	12.00	304.8
3×2 ¹ / ₂	80×65	25	2.37	60.2	3.25	82.6	3.00	76.2	12.00	304.8
		22	1.50	38.1	4.13	104.9	2.11	53.6	14.00	355.6
		22	1.95	49.5	4.13	104.9	2.69	68.3	14.00	355.6
		20	2.37	60.2	4.13	104.9	3.00	76.2	14.00	355.6
		20	2.94	74.7	4.13	104.9	3.25	82.6	14.00	355.6
6×2	150×50	12~14	1.50	38.1	4.63	117.6	2.69	68.3	16.00	406.4
6×2 ¹ / ₂	150×65	12~14	2.37	60.2	4.63	117.6	3.00	76.2	16.00	406.4
6×3	150×80	12~14	2.94	74.7	4.63	117.6	3.25	82.6	16.00	406.4
6×4	150×100	12~14	3.92	99.6	4.63	117.6	4.13	104.9	16.00	406.4
		10	2.94	74.7	4.50	114.3	3.25	82.6	17.00	431.8
		10	3.92	99.6	4.50	114.3	4.13	104.9	17.00	431.8
		10	5.93	150.6	4.50	114.3	4.63	117.6	17.00	431.8

Outside thread standard: API SPEC 5B

COUPLING FOR REPAIR



Socket connection for both ends

Diameter		Pressure (MPa)	Type	Socket length C		OD D		Coupling length L	
(in)	(mm)			(in)	(mm)	(in)	(mm)	(in)	(mm)
1½	40	7~10	A	3.220	81.8	2.20	55.9	18.0	457.2
		12~14	B	3.460	87.9				
		17	C	4.260	108.2				
		18	D	4.580	116.3				
2	50	5.5~8.5	A	3.220	81.8	3.00	76.2	18.0	457.2
		10~12	B	4.020	102.1				
		14~17	C	4.500	114.3				
		18	D	5.150	130.8				
2½	65	5.5~8.5	A	3.220	81.3	3.7	92.7	18.0	457.2
		10~12	B	4.380	122.7				
		14	C	5.470	138.9				
		17~18	D	6.760	171.7				
3	80	3.5~8.5	A	5.000	127.0	4.50	114.3	18.0	457.2
		10	B	4.830	122.7				
		12~14	C	6.900	175.3				
		17~18	D	8.200	208.3				
4	100	3.5~8.5	A	5.600	142.2	5.75	148.3	18.0	457.2
		10~12	B	7.000	177.8				
		14	C	8.800	223.5				
6	150	3.5	A	4.500	114.3	8.00	203.2	18.0	457.2
		5.5~8.5	B	8.080	205.3				
		10	C	9.000	228.6				
8	200	3.5~7	A	8.160	207.3	10.00	254.0	18.0	457.2
		8.5	B	6.744	171.3				

Product Typical Physical and Chemical Property

Product Typical Physical Property

Longitudinal tensile strength	MPa	90
Longitudinal tensile modulus	MPa	10440
Longitudinal compression strength	MPa	130
Hoop tensile strength	MPa	340
Hoop tensile modulus	MPa	21500
Linear expansion coefficient	mm/mm/°C	2.27×10 ⁻⁵
Heat conductive coefficient	W/(m)(°C)	0.14
Density	Kg/m ³	1.9~2.0×10 ³
Poisson's ratio	/	0.4
Hacen Williams coefficient	/	150

Product Typical Chemical Resistance (1)

Chemical environment	Recommended highest temperature
Ethane 100%	24
Hydrochloric acid 10%	NR
Sulfureted hydrogen (dry) 100%	66
Sulfureted hydrogen (wet and saturation)	52
Coal oil	66
Carbinol 20%	38
Mineral alcohol	24
Petroleum essence	38
Sulphuric acid 3%	24
Toluene 100%	NR
Chloridized water 100 ppm	77
Distilled water	80
Hard water	80
Seawater	80

Product Typical Chemical Resistance (2)

Chemical environment	Recommended highest temperature
Hydrochloric Acid 20%	NR
Benzene 10%	21
Citric acid 25%	66
Crude oil (with and without sulphur)	77
Ethanol 100%	24
Fuel Oil	66
Hcptane 100%	52
Hydrochloric acid 3%	24
Hydrofluorid acid	NR
Pyruvic acid 3%	38
Aviation Fuel 100%	66
Methane	60
Chloromethane 10%	NR
Inorganic mud acid 5%	38
(Exposure endurance under 8 hours)	
Sodium hydroxide 5-50%	NR
Sulphuic acid 100%	NR
Alcoholic amine 100%	NR
Soft water	38
Haloid water	80
Brine	80
Toluene	NR
Amine hydroxidc 28%	NR
(1) CO2 (dry)	80
(2) CO2 (wet)	66
Diesel Oil 100%	66
Ethanol (all)	80
Gasoline 100%	60

Note: NR indicate the unadvisable application

Non-critical state: FRP pipe is not applicable to the transportation of CO2 in ultral state. The table provide the references for the application of high-pressure FRP pipe and the common chemical resistance index of the high-pressure FRP pipe. The influences of chemical compounds, thermodynamics, associated loading and stress are not considered. The highest temperature in the table is based on the newly announced experimental results of laboratory, practical application in oil-field and the data from raw material providers.

Product Data

Glass-fiber Reinforced Epoxy Pipe System

LNG & Chemical Industry Areas

Pipe Summary

◇ Rated Pressure Range: $\leq 5.5\text{MPa}$

◇ Curing Series: Acid Anhydride – cured system Aromatic Amine – cured system

◇ Max. Operating Temperature: 120°C

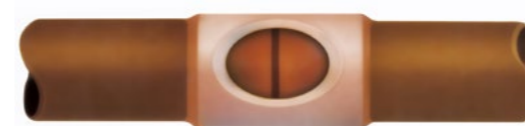
◇ Diameter Range: 1½" – 40" (40mm – 1000mm)

● (Pipe-connecting Series)

◇ Socket Joint



◇ Double “O-ring” Joint



◇ API 8 RND Thread Joint



● Manufacture and Acceptance Criteria)

◇ American Petroleum Institute(API) 15LR Standards

◇ SY/T6266–2004
Chinese Petroleum and Nature Gas Industry Standards

◇ IMO A • 753
International Maritime Organization A.753 Standards

◇ ASTM F1173
America Society for Testing and Materials F1173 Standards

● Application

◇ Fire water pipeline for LNG Terminal

◇ Sea water pipeline

◇ Brine pipeline

◇ Clean and wasted water pipeline

● Approval

◇ API 15LR
American Petroleum Institute 15LR Certification

◇ MLSEC
Manufacture License of Special Equipment Certification

◇ USA
ABS Certification

◇ China
CCS Certification

◇ Germany
DNV.GL Certification

◇ France
BV Certification

◇ Korea
KR Certification

● Product Characters

- ◇ High pressure resistance, corrosion resistance, long service life
- ◇ Meeting the requirements of Jet Fire in ASTM F1173
- ◇ Anti-static
- ◇ Low friction coefficient, no-scale, excellent hydraulic characteristic

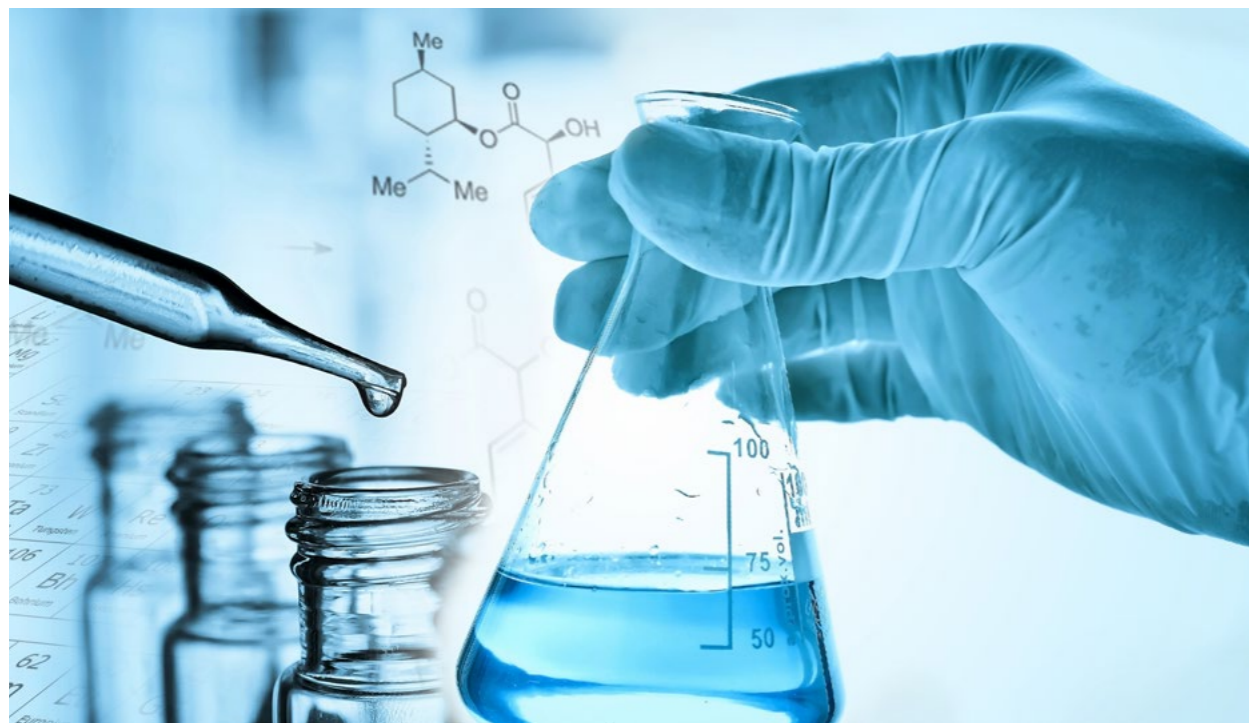
● Product Assurance

◇ Raw material: The main materials include the reinforced fiber-glass from PPG company and Owens Coming company and the epoxy resin from the American DOW company and the domestic large enterprises.

◇ Effectively audit operator in process: Pipe is manufactured using computer-controlled equipment, so that it can meet industry's ever more exacting needs for quality products and services, it is also certificated with ISO 9001.

◇ Acceptance Control: Each pipe will have the pressure test by using the automatic press machine, in order to make sure all the pipes and fittings are qualified.

◇ Note: The company reserves the right to change the specifications and technical data and the instructions and graphic materials. The data is only a general introduction rather than some kind of guarantee.



Pipe Size and Rated Pressure

Pipe Specification		Rated Pressure MPa											
		1.0	1.6	2.0	2.5	3.5	4	5.5	6	8	10	12	
in	mm												
1½ "	40	√	√	√	√	√	√	√	√	√	√	√	√
2 "	50	√	√	√	√	√	√	√	√	√	√	√	√
3 "	80	√	√	√	√	√	√	√	√	√	√	√	√
4 "	100	√	√	√	√	√	√	√	√	√	√	√	√
6 "	150	√	√	√	√	√	√	√	√	√	√	√	√
8 "	200	√	√	√	√	√	√	√	√	√	√	√	√
10 "	250	√	√	√	√	√	√	√	√	√	√	√	√
12 "	300	√	√	√	√	√	√	√	√	√	√	√	√
16 "	400	√	√	√	√	√	√	√	√	√	√	√	√
20 "	500	√	√	√	√	√	√	√	√	√	√	√	√
24 "	600	√	√	√	√	√	√	√	√	√	√	√	√
32 "	800	√	√	√	√	√	√	√	√	√	√	√	√
36 "	900	√	√	√	√	√	√	√	√	√	√	√	√
40 "	1000	√	√	√	√	√	√	√	√	√	√	√	√

Note: "√" means our company's existing pipe production capacity.

Pipe Size and Weight

Specification		ID	OD	Wall Thickness	AVG Weight	Rated Pressure
mm	in	mm	mm	mm	Kg/m	Mpa
40	1½	38	44	3.0	1.3	1.6
50	2	48	54.2	3.1	1.3	1.6
80	3	76	82.2	3.1	1.8	1.6
100	4	98	106.2	4.1	3.1	1.6
125	5	123	131.2	4.1	3.5	1.6
150	6	148	156.2	4.1	4.6	1.6
200	8	193	204	5.5	7.4	1.6
250	10	250	264	7.0	12	1.6
300	12	300	316.6	8.3	17	1.6
350	14	350	368	9.0	19	1.6
400	16	400	420.6	10.3	25	1.6
450	18	450	473	11.5	32	1.6
500	20	500	525.6	12.8	29	1.6
600	24	600	630.8	15.4	56	1.6
700	28	700	737.4	18.7	75	1.6
750	30	750	790	20.0	93	1.6
800	32	800	842.8	21.4	102	1.6
900	36	900	948	24.0	132	1.6
1000	40	1000	1053.8	26.9	165	1.6

Specification		ID	OD	Wall Thickness	AVG Weight	Rated Pressure
mm	in	mm	mm	mm	Kg/m	Mpa
40	1½	38	44	3	1.3	2.0
50	2	48	54.2	3.1	1.3	2.0
80	3	76	82.2	3.1	1.8	2.0
100	4	98	106.2	4.1	3.1	2.0
125	5	123	131.2	4.4	3.76	2.0
150	6	148	158.6	5.3	5.87	2.0
200	8	193	207	7	9.48	2.0
250	10	250	267.6	8.8	15.2	2.0
300	12	300	318.4	9.2	18.9	2.0
350	14	350	372	11	23.5	2.0
400	16	400	425	12.5	30.7	2.0
450	18	450	476	13	36.5	2.0
500	20	500	528	14	43.1	2.0
600	24	600	634	17	62.6	2.0
700	28	700	740	20	82.9	2.0
750	30	750	793	21.5	101.5	2.0
800	32	800	845	22.5	109.8	2.0
900	36	900	950	25	140	2.0
1000	40	1000	1055	27.5	171.5	2.0

● Fittings: Fittings related to pipe under the pressure of 1.6MPa~2.0MPa, include flange, elbow, tee, reducer and so on. Those fittings are manufactured through the mechanical winding or composite molding. Its performance is same as the pipe in pressure, temperature, and resistance to chemical corrosion, and its joint matches with the pipe of the same specification.

Engineering Data Sheet

Nominal pipe size		pressure rating		Vacuum and the pressure level at room temperature			
				limiting pressure		rated pressure	
in	mm	psig	Mpa	psig	Mpa	psig	Mpa
1½	40	230	1.6	> 3000	> 210	> 1000	> 70
2	50	230	1.6	> 1700	> 117	> 563	> 38.8
2½	65	230	1.6	1500	100	500	34.5
3	80	230	1.6	855	59	210	14.5
4	100	230	1.6	305	21	96	6.6
5	125	230	1.6	380	26.2	55	3.8
6	150	230	1.6	175	12.1	55	3.8
8	200	230	1.6	85	5.9	28	1.9
10	250	230	1.6	80	5.5	26	1.8
12	300	230	1.6	75	5.2	24	1.7
14	350	230	1.6	75	5.2	23	1.6
16	400	230	1.6	70	4.8	23	1.6
18	450	230	1.6	70	4.8	22	1.5
20	500	230	1.6	70	4.8	22	1.5
24	600	230	1.6	70	4.8	22	1.5
26	650	230	1.6	70	4.8	22	1.5
28	700	230	1.6	70	4.8	22	1.5
30	750	230	1.6	70	4.8	22	1.5
32	800	230	1.6	70	4.8	22	1.5
36	900	230	1.6	70	4.8	22	1.5
40	1000	230	1.6	70	4.8	22	1.5

Nominal pipe size		pressure rating		Vacuum and the pressure level at room temperature			
				limiting pressure		rated pressure	
in	mm	psig	Mpa	psig	Mpa	psig	Mpa
1½	40	285	2.0	> 3000	> 210	> 1000	> 70
2	50	285	2.0	> 1700	> 117	> 563	> 38.8
2½	65	285	2.0	1500	100	500	34.5
3	80	285	2.0	855	59	210	14.5
4	100	285	2.0	305	21	96	6.6
5	125	285	2.0	380	26.2	55	3.8
6	150	285	2.0	175	12.1	55	3.8
8	200	285	2.0	175	12.1	55	3.8
10	250	285	2.0	175	12.1	55	3.8
12	300	285	2.0	175	12.1	55	3.8
14	350	285	2.0	175	12.1	55	3.8
16	400	285	2.0	175	12.1	55	3.8
18	450	285	2.0	175	12.1	55	3.8
20	500	285	2.0	175	12.1	55	3.8
24	600	285	2.0	175	12.1	55	3.8
26	650	285	2.0	150	10.3	50	3.4
28	700	285	2.0	150	10.3	50	3.4
30	750	285	2.0	150	10.3	50	3.4
32	800	285	2.0	150	10.3	50	3.4
36	900	285	2.0	150	10.3	50	3.4
40	1000	285	2.0	150	10.3	50	3.4

Pipe Physical and Chemical Characteristics

Character	Characteristic value (psi)		Characteristic value (Mpa)	
	75	200	24 °C	93°C
Axial tensile-ASTMD2105 limit stress	10,300	7,680	71	52.9
Design stress	2,575	1,920	17.8	13.2
Gave quantity elasticity	1.61×106	1,16×106	12411	7997
Poisson's ratio	0.38		0.38	
Axial compression-ASTMD695 limit stress	33,300	20,383	230.0	140.5
Design stress	8,300	5,090	57.4	35.1
Elastic modulus	1.26×106	0.66×106	8687	4550
Bending beam-ASTMD2925 limit stress limit stress	23,000	17,166	159	118.3
Design stress	2,900	2,145	20.0	14.8
Elastic modulus (long-term)	2.18×106	1.29×106	15031	8894
Static pressure blasting test-ASTMD1599	46,300	47,990	319	330
Static pressure ASTM D2992 Method A hoop tensile stress		6,090		41.9
150 x10° Cycles LTHS	8,850		61.0	
Method B hoop tensile stress LTHS		16,945		116.8
200 ° F, the static pressure 20 years LCL		14,654		101.0
coefficient of linear expansion -ASTM D696	1.26×10-5in/in/ °F		2.27×10-5mm/mm/ °C	
Wire coefficient -ASTM D177	0.23BTU/(ft)(hr)(°F)		0.14W/(m)(°C)	
Proportion-ASTM D792	1.8		1.8	
SF Flow coefficient -SF Hacen williams coefficient	150		150	

Pipe Chemical Corrosion Resistance Sheet

Chemical environment	Recommended highest temperature °C
Ethane100%	24
Hydrochloric acid10%	NR
Sulfureted hydrogen (dry)100%	66
Sulfureted hydrogen (wet and saturation)	52
Coal oil	66
Carbinol 20%	38
Mineral alcohol	24
Petrolic essence	38
Sulphuric acid 3%	24
Toluene 100%	NR
Chloridized water 100 ppm	77
Distilled water	80
Hard water	80
Sea water	80
Hydrochloric acid 20%	NR
Benzene 10%	21
Citric acid 25%	66
Crude oil (with and without sulphur)	77
Ethanol 100%	24
Fuel oil	66
Hcptane 100%	52
Hydrochloric acid 3%	24
Hydrofluorid acid	NR
Pyruvic acid 3%	38
Aeromautic oil 100%	66
Methane	60
Chloromethane 10%	NR
Inorganic mud acid 5%	38
(Exposure endurance under 8 hours)	
Sodium hydroxide 5-50%	NR
Sulphuric acid 100%	NR
Alcoholic amine 100%	NR
Soft water	38
Haloid water	80
Brine	80
Toluene	NR
Amine hydroxidc 28%	NR
(1) CO2 (dry)	80
(2) CO2(wet)	66
Diesel oil 100%	66
Ethanol (all)	80
Gasoline 100%	60

Case History (Part)



Acid Gas Exhaust System of Drilling Unit Platform



Recovery platforms water supply system



Ningbo ship ballast piping



Offshore Oil Field Cooling Water Line for Oil & Gas Pot



Chemical plant



Hot spring pipes



Salt company



Oil field pipeline

GRE PIPE EXPERT

Glassfiber Reinforced Epoxy



Manufacturer

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