

## Applications

- Production Lines or Injection Lines
- Oil, Gas, Saltwater
- Transfer Lines or Disposal Lines
- CO<sub>2</sub> and Sour Services
- Pipeline Rehabilitation

### Product Description

- **Sizes** - 2 through 12 inches
- **Pressure** - Up to 3,000 psi (20.7 MPa)
- **Temperature** -
  - Anhydride = up to 150°F (65.6°C) Max.
  - Aliphatic Amine = up to 200°F (93.3°C) Max.
  - Aromatic Amine = up to 212°F (100°C) Max.
- **Resin System** - Anhydride, Aliphatic Amine and Aromatic Amine Cured Epoxy
- **Reinforcement** - Premium Fiberglass
- **Joining Systems** - O-ring
- **Joint Length** - 30-37 feet (9-11 mts) nominal
- **Fittings** - A variety of filament wound threaded fittings are available

### High Pressure Design

#### (API 15HR Design)

- **Design Life** - 20 years at full rating
- **Design Temperature** - 150° F (65.6°C)
- **Wall Thickness** - Minimum
- **Hoop Stress** - 95% Lower Confidence Limit (LCL) of Long-Term Hydrostatic Strength (LTHS), ASTM D2992-B
- **100% Factory Hydro Test** - All sizes 1.5 times the Series pressure rating

### Benefits

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

### Joining System

- **CEN** - 4 thread-per-inch modified ACME thread with O-ring seal
- **SP** - 4 thread-per-inch round form thread with O-ring seal
- **SPH** - 4 thread-per-inch buttress thread with O-ring seal
- **SS** - 2 thread-per-inch mechanical joint with O-ring seal
- **SS HP** - 2 thread-per-inch mechanical joint with O-ring seal

#### View of Joint Illustrations



CEN



SP, SPH



SS, SS HP

# Anhydride

## Series 500

500 psi (3.4 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	CEN	2.23	56.5	0.06	1.6	0.07	1.8	0.67	1.0	3.09	78.5	120	36.6	1800	816	W
3	80	CEN	3.35	85.1	0.06	1.6	0.07	1.8	0.97	1.4	4.23	107.5	176	53.6	2500	1134	W
6	150	SPH	6.10	154.9	0.11	2.8	0.12	3.1	3.22	4.8	7.80	198.1	319	97.2	8100	3674	W

## Series 750

750 psi (5.2 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
3	80	SP	3.00	76.2	0.08	2.1	0.09	2.3	1.24	1.8	4.29	109.1	162	49.4	3200	1451	W
4	100	SP	3.91	99.3	0.11	2.7	0.12	3.0	1.91	2.8	5.33	135.5	210	64.0	5200	2359	W
6	150	SPH	6.10	154.9	0.16	4.2	0.18	4.7	4.16	6.2	8.01	203.4	325	99.1	11500	5216	W

## Series 1000

1000 psi (6.9 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.07	1.8	0.08	2.0	0.66	1.0	3.10	78.7	106	32.3	1600	726	W
3	80	SP	3.00	76.2	0.11	2.8	0.12	3.1	1.48	2.2	4.41	112.0	165	50.3	4100	1860	W
4	100	SP	3.91	99.3	0.14	3.6	0.16	4.0	2.22	3.3	5.48	139.1	213	64.9	6300	2858	W
6	150	SPH	6.10	154.9	0.22	5.6	0.25	6.3	5.17	7.7	8.22	208.7	331	100.9	15000	6804	W
8	200	SS HP	7.49	190.1	0.27	6.9	0.3	7.7	7.65	11.4	10.39	263.8	406	123.7	21800	9888	W
10	250	SS HP	9.84	249.9	0.36	9.1	0.4	10.1	12.69	18.9	13.23	336.0	533	162.5	37100	16828	W
12	300	SS HP	11.81	300.0	0.43	10.9	0.48	12.1	18.10	26.9	15.36	390.3	641	195.4	55100	24993	W

## Series 1250

1250 psi (8.6 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.09	2.3	0.1	2.5	0.82	1.2	3.18	80.8	109	33.2	2200	998	W
3	80	SP	3.00	76.2	0.14	3.5	0.15	3.9	1.73	2.6	4.52	114.9	168	51.2	5000	2268	W
4	100	SP	3.91	99.3	0.18	4.6	0.2	5.1	2.61	3.9	5.62	142.8	216	65.8	7600	3447	W
6	150	SPH	6.10	154.9	0.28	7.1	0.31	7.9	6.33	9.4	8.57	217.6	338	103.0	18600	8437	W
8	200	SS HP	7.49	190.1	0.34	8.7	0.38	9.7	9.54	14.2	10.63	270.0	414	126.2	28200	12791	W
10	250	SS HP	9.84	249.9	0.45	11.5	0.5	12.8	15.94	23.7	13.54	344.0	545	166.1	48600	22045	W
12	300	SS HP	11.81	300.0	0.54	13.8	0.6	15.3	22.17	33.0	15.73	399.6	653	199.0	69200	31389	W

## Anhydride - Cont'd

### Series 1500

1500 psi (10.3 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.11	2.8	0.12	3.1	0.88	1.3	3.26	82.9	110	33.5	2400	1089	W
3	80	SP	3.00	76.2	0.17	4.2	0.19	4.7	2.01	3.0	4.64	118.0	171	52.1	5900	2676	W
4	100	SP	3.91	99.3	0.22	5.5	0.24	6.1	3.24	4.8	5.78	146.7	222	67.7	9700	4400	W
6	150	SS HP	5.85	148.6	0.33	8.3	0.36	9.2	7.24	10.8	8.94	227.2	331	100.9	21200	9616	W
6	150	SPH	6.10	154.9	0.34	8.6	0.38	9.6	7.50	11.2	8.82	224.1	344	104.9	22300	10115	W
8	200	SS HP	7.49	190.1	0.42	10.6	0.46	11.8	10.88	16.2	10.88	276.3	421	128.3	32700	14832	W
10	250	SS HP	9.84	249.9	0.55	13.9	0.61	15.5	18.63	27.7	13.87	352.2	554	168.9	57600	26127	W
12	300	SS HP	11.81	300.0	0.66	16.7	0.73	18.6	26.38	39.3	16.11	409.3	665	202.7	83800	38011	W

### Series 1750

1750 psi (12.1 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.13	3.3	0.14	3.6	1.03	1.5	3.35	85.0	113	34.4	2900	1315	W
3	80	SP	3.00	76.2	0.2	5.0	0.22	5.6	2.30	3.4	4.77	121.1	174	53.0	6800	3084	W
4	100	SPH	3.91	99.3	0.26	6.5	0.29	7.2	3.68	5.5	6.09	154.7	225	68.6	11000	4990	W
6	150	SS HP	5.85	148.6	0.38	9.8	0.43	10.8	8.31	12.4	9.15	232.5	337	102.7	24900	11294	W
6	150	SPH	6.10	154.9	0.4	10.2	0.44	11.3	8.67	12.9	9.09	230.8	350	106.7	26200	11884	W
8	200	SS HP	7.49	190.1	0.49	12.5	0.55	13.9	12.85	19.1	11.13	282.8	430	131.1	39600	17962	W
10	250	SS HP	9.84	249.9	0.65	16.4	0.72	18.2	22.11	32.9	14.20	360.7	566	172.5	69800	31661	W
12	300	SS HP	11.81	300.0	0.77	19.7	0.86	21.9	30.80	45.8	16.50	419.1	678	206.7	98800	44815	W

### Series 2000

2000 psi (13.8 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.15	3.8	0.16	4.2	1.19	1.8	3.44	87.3	116	35.4	3500	1588	W
3	80	SP	3.00	76.2	0.23	5.8	0.25	6.4	2.59	3.9	4.89	124.3	177	53.9	7800	3538	W
4	100	SPH	3.91	99.3	0.3	7.5	0.33	8.4	4.40	6.6	6.25	158.8	231	70.4	13500	6123	W
6	150	SS HP	5.85	148.6	0.44	11.3	0.49	12.5	9.45	14.1	9.36	237.8	343	104.5	28700	13018	W
6	150	SPH	6.10	154.9	0.46	11.7	0.51	13.0	9.88	14.7	9.36	237.7	356	108.5	30200	13698	W
8	200	SS HP	7.49	190.1	0.57	14.4	0.63	16.0	14.93	22.2	11.40	289.5	439	133.8	46700	21183	W
10	250	SS HP	9.84	249.9	0.75	18.9	0.83	21.0	24.99	37.2	14.54	369.4	576	175.6	79400	36015	W
12	300	SS HP	11.81	300.0	0.89	22.7	0.99	25.3	35.31	52.6	16.90	429.3	691	210.6	114400	51891	W

## Anhydride - Cont'd

### Series 2250

2250 psi (15.5 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
3	80	SP	3.00	76.2	0.26	6.6	0.29	7.3	2.90	4.3	5.03	127.7	180	54.9	8800	3992	W
4	100	SPH	3.91	99.3	0.34	8.6	0.37	9.5	4.91	7.3	6.60	167.6	234	71.3	14800	6713	W
6	150	SS HP	5.85	148.6	0.50	12.8	0.56	14.2	10.59	15.8	9.58	243.4	350	106.7	32700	14832	W
8	200	SS HP	7.49	190.1	0.65	16.4	0.72	18.2	17.04	25.4	11.67	296.4	448	136.6	54100	24539	W
10	250	SS HP	9.84	249.9	0.85	21.5	0.94	23.9	28.79	42.8	14.89	378.3	588	179.2	92500	41957	W

### Series 2500

2500 psi (17.2 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.19	4.8	0.21	5.3	1.49	2.2	3.73	94.7	120	36.6	4300	1950	W
3	80	SP	3.00	76.2	0.29	7.4	0.32	8.2	3.28	4.9	5.32	135.2	183	55.8	9900	4491	W
4	100	SPH	3.91	99.3	0.38	9.6	0.42	10.7	5.69	8.5	6.80	172.7	240	73.2	17500	7938	W
6	150	SS HP	5.85	148.6	0.57	14.4	0.63	16.0	11.81	17.6	9.81	249.1	356	108.5	36700	16647	W
8	200	SS HP	7.49	190.1	0.72	18.4	0.81	20.5	19.28	28.7	11.95	303.5	458	139.6	61700	27987	W

### Series 2750

2750 psi (19.0 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
6	150	SS HP	5.85	148.6	0.63	16.0	0.70	17.8	13.08	19.5	10.04	255.0	363	110.6	40900	18552	W
8	200	SS HP	7.49	190.1	0.81	20.5	0.90	22.8	20.97	31.2	12.23	310.7	464	141.4	67100	30436	W

### Series 3000

3000 psi (20.7 MPa)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
3	80	SP	3.00	76.2	0.36	9.1	0.40	10.1	4.01	6.0	5.65	143.6	190	57.9	12100	5488	W
6	150	SS HP	5.85	148.6	0.70	17.7	0.77	19.6	14.92	22.2	10.28	261.0	372	113.4	47300	21455	W

## Aliphatic Amine

### Series 500

500 psi (3.4 MPa) 150°F (65.6°C), 421 psi (2.9 MPa) @ 200°F (93.3°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
In	mm		In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs	
8	200	SS	7.74	196.6	0.16	4.1	0.18	4.6	5.04	7.5	9.71	246.6	407	124.1	14200	4328	S
10	250	SS	9.84	249.9	0.21	5.3	0.23	5.8	8.19	12.2	12.01	305.1	516	157.3	21600	6584	S
12	300	SS	11.81	300.0	0.25	6.4	0.28	7.1	11.67	17.4	14.25	362.0	620	189.0	31800	9693	S

### Series 750

750 psi (5.2 MPa) @ 150°F (65.6°C), 632 psi (4.4 MPa) @ 200°F (93.3°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
In	mm		In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs	
8	200	SS	7.74	196.6	0.25	6.4	0.28	7.1	6.72	10.0	9.87	250.7	415	126.5	20000	6096	S
10	250	SS	9.84	249.9	0.32	8.1	0.35	8.9	11.37	16.9	12.25	311.2	528	160.9	32700	9967	S
12	300	SS	11.81	300.0	0.38	9.7	0.42	10.7	16.08	23.9	14.55	369.6	634	193.2	47000	14326	S

### Series 1000

1000 psi (6.9 MPa) @ 150°F (65.6°C), 843psi (5.8 MPa) @ 200°F (93.3°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
In	mm		In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs	
8	200	SS	7.74	196.6	0.34	8.6	0.37	9.4	8.85	13.2	10.07	255.8	425	129.5	27300	8321	S
10	250	SS	9.84	249.9	0.43	10.9	0.48	12.2	14.91	22.2	12.80	325.1	540	164.6	43900	13381	S
12	300	SS	11.81	300.0	0.51	13.0	0.57	14.5	21.43	31.9	15.09	383.3	649	197.8	64600	19690	S

## Aromatic Amine

### Series 500

500 psi (3.4 MPa) @ 150°F (65.6°C), 421 psi (2.9 MPa) @ 200°F (93.3°C), 405 psi (2.8 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
In	mm		In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs	
2	50	CEN	2.23	56.5	0.06	1.6	0.07	1.7	0.63	0.9	3.04	77.3	119	36.3	1600	726	W
3	80	CEN	3.35	85.1	0.07	1.8	0.08	2.0	1.15	1.7	4.24	107.7	177	53.9	3000	1361	W
6	150	SPH	6.10	154.9	0.13	3.3	0.14	3.7	3.52	5.2	7.80	198.2	321	97.8	8700	3946	W

### Series 750

750 psi (5.2 MPa) @ 150°F (65.6°C), 632 psi (4.4 MPa) @ 200°F (93.3°C), 608 psi (4.2 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
In	mm		In	mm	In	mm	In	mm	Lbs/ft	kg/m	In	mm	Ft	m	Lbs	kgs	
3	80	SP	3.00	76.2	0.10	2.5	0.11	2.7	1.39	2.1	4.30	109.2	163	49.7	3600	1633	W
4	100	SP	3.91	99.3	0.13	3.2	0.14	3.6	2.08	3.1	5.34	135.6	211	64.3	5500	2495	W
6	150	SPH	6.10	154.9	0.20	5.0	0.22	5.6	4.79	7.1	8.01	203.5	328	100.0	13100	5942	W

## Aromatic Amine - Cont'd

### Series 1000

1000 psi (6.9 MPa) @ 150°F (65.6°C), 843 psi (5.8 MPa) @ 200°F (93.3°C), 810 psi (5.6 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.08	2.2	0.09	2.4	0.76	1.1	3.10	78.8	108	32.9	1900	862	W
3	80	SP	3.00	76.2	0.13	3.3	0.15	3.7	1.60	2.4	4.41	112.1	165	50.3	4300	1950	W
4	100	SP	3.91	99.3	0.17	4.3	0.19	4.8	2.63	3.9	5.48	139.3	216	65.8	7400	3357	W
6	150	SPH	6.10	154.9	0.27	6.7	0.30	7.5	6.17	9.2	8.32	211.3	336	102.4	17600	7983	W
8	200	SS HP	7.49	190.1	0.33	8.3	0.36	9.2	9.22	13.7	10.39	263.8	412	125.6	26200	11884	W
10	250	SS HP	9.84	249.9	0.43	10.9	0.48	12.1	15.23	22.7	13.23	336.0	540	164.6	44400	20139	W
12	300	SS HP	11.81	300.0	0.51	13.1	0.57	14.5	21.77	32.4	15.36	390.3	650	198.1	65800	29846	W

### Series 1250

1250 psi (8.6 MPa) @ 150°F (65.6°C), 1054 psi (7.3 MPa) @ 200°F (93.3°C), 1013 psi (7.0 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.11	2.7	0.12	3.0	0.91	1.3	3.18	80.9	110	33.5	2400	1089	W
3	80	SP	3.00	76.2	0.17	4.2	0.18	4.7	2.04	3.0	4.53	115.1	170	51.8	5800	2631	W
4	100	SP	3.91	99.3	0.22	5.5	0.24	6.1	3.21	4.8	5.63	143.1	221	67.4	9300	4218	W
6	150	SPH	6.10	154.9	0.34	8.5	0.37	9.5	7.56	11.2	8.57	217.6	343	104.5	22200	10070	W
8	200	SS HP	7.49	190.1	0.41	10.5	0.46	11.6	11.38	16.9	10.63	270.0	422	128.6	33500	15195	W
10	250	SS HP	9.84	249.9	0.54	13.8	0.60	15.3	18.81	28.0	13.54	344.0	553	168.6	56500	25628	W
12	300	SS HP	11.81	300.0	0.65	16.5	0.72	18.4	27.07	40.3	15.73	399.6	665	202.7	83600	37920	W

### Series 1500

1500 psi (10.3 MPa) @ 150°F (65.6°C), 1264 psi (8.7 MPa) @ 200°F (93.3°C), 1215 psi (8.4 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.13	3.3	0.14	3.7	1.05	1.6	3.27	83.0	113	34.4	2900	1315	W
3	80	SP	3.00	76.2	0.2	5.1	0.22	5.7	2.27	3.4	4.65	118.2	173	52.7	6500	2948	W
4	100	SPH	3.91	99.3	0.26	6.6	0.29	7.4	3.84	5.7	5.94	150.9	225	68.6	11200	5080	W
6	150	SS HP	5.85	148.6	0.39	9.9	0.43	11.0	8.71	13.0	8.94	227.2	338	103.0	25500	11567	W
6	150	SPH	6.10	154.9	0.41	10.4	0.45	11.5	9.01	13.4	8.82	224.1	351	107.0	26800	12156	W
8	200	SS HP	7.49	190.1	0.5	12.7	0.56	14.1	13.57	20.2	10.88	276.3	431	131.4	40900	18552	W
10	250	SS HP	9.84	249.9	0.66	16.7	0.73	18.6	22.49	33.5	13.87	352.2	565	172.2	68800	31207	W
12	300	SS HP	Consult Fiber Glass Systems Applications Engineer for availability														

## Aromatic Amine - Cont'd

### Series 1750

1750 psi (12.1 MPa) @ 150°F (65.6°C), 1475 psi (10.2 MPa) @ 200°F (93.3°C), 1418 psi (9.8 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.15	3.9	0.17	4.4	1.20	1.8	3.35	85.2	115	35.1	3400	1542	W
3	80	SP	3.00	76.2	0.24	6.0	0.26	6.7	2.74	4.1	4.78	121.3	178	54.3	8100	3674	W
4	100	SPH	3.91	99.3	0.31	7.9	0.34	8.7	4.51	6.7	6.22	158.0	230	70.1	13200	5987	W
6	150	SS HP	5.85	148.6	0.46	11.7	0.51	13.1	10.04	14.9	9.15	232.5	345	105.2	30000	13608	W
6	150	SPH	6.10	154.9	0.48	12.3	0.54	13.6	10.88	16.2	9.09	230.8	361	110.0	33100	15014	W
8	200	SS HP	7.49	190.1	0.59	15.0	0.66	16.7	15.79	23.5	11.13	282.8	441	134.4	48400	21954	W
10	250	SS HP	Consult Fiber Glass Systems Applications Engineer for availability														
12	300	SS HP	Consult Fiber Glass Systems Applications Engineer for availability														

### Series 2000

2000 psi (13.8 MPa) @ 150° F (65.6°C), 1686 psi (11.6 MPa) @ 200°F (93.3°C), 1620 psi (11.2 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
2	50	SP	1.95	49.5	0.18	4.5	0.2	5.0	1.36	2.0	3.44	87.5	118	36.0	3900	1769	W
3	80	SP	3.00	76.2	0.27	7.0	0.31	7.8	3.26	4.8	5.02	127.4	183	55.8	9700	4400	W
6	150	SS HP	5.85	148.6	0.54	13.6	0.6	15.1	11.42	17.0	9.36	237.8	353	107.6	34500	15649	W
8	200	SS HP	7.49	190.1	0.69	17.4	0.76	19.3	18.08	26.9	11.40	289.5	451	137.5	56000	25401	W
10	250	SS HP	Consult Fiber Glass Systems Applications Engineer for availability														

### Series 2250

2250 psi (15.5 MPa) @ 150° F (65.6°C), 1897 psi (13.1 MPa) @ 200°F (93.3°C), 1823 psi (12.6 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
6	150	SS HP	5.85	148.6	0.61	15.5	0.68	17.2	13.23	19.7	9.58	243.4	362	110.3	40700	18461	W
8	200	SS HP	Consult Fiber Glass Systems Applications Engineer for availability														

### Series 2500

2500 psi (17.2 MPa) @ 150°F (65.6°C), 2107 (14.5 MPa) @ 200°F (93.3°C), 2025 (14.0 MPa) @ 212°F (100°C)

Pipe Size		Thread Type	Pipe Dimensions								Connection Diameter		Minimum Bending Radius		Short-Term Tensile Rating		Mfg. Loc.*
			Inside Diameter		Minimum Wall Thickness		Nominal Wall Thickness		Pipe Weight								
in	mm		in	mm	in	mm	in	mm	lbs/ft	kg/m	in	mm	ft	m	lbs	kgs	
3	80	SP	3.00	76.2	0.35	9.0	0.39	10.0	4.01	6.0	5.32	135.2	190	57.9	12000	5443	W
6	150	SS HP	5.85	148.6	0.69	17.5	0.76	19.4	14.66	21.8	9.81	249.1	369	112.5	45300	20548	W

The standard pressure ratings are for non-cyclic, water, and hydrocarbon service. A service factor of 0.67 is required for gas service. If customer elects to use other safety factors, consult NOV Fiber Glass Systems. For other applications, consult NOV Fiber Glass Systems engineering.

All pipe products are factory hydrotested to 1.5 times maximum recommended operating pressure. Material selection is based on the desired operating temperature and chemical compatibility of NOV Fiber Glass Systems constituents with fluids.

\*Manufacturing Location

W = Wichita S = San Antonio

Anhydride = up to 150°F (65.6°C)

Aliphatic Amine = up to 200°F (93.3°C)

Aromatic Amine = up to 212°F (100°C)

## Typical SLT\* Properties

<b>Axial Modulus</b>	<b>psi</b>	1.87 x 10 <sup>6</sup>
	<b>GPa</b>	12.9
<b>Hoop Modulus</b>	<b>psi</b>	3.58 x 10 <sup>6</sup>
	<b>GPa</b>	24.7
<b>Shear Modulus</b>	<b>psi</b>	1.6 x 10 <sup>6</sup>
	<b>GPa</b>	11
<b>Poisson's Ratio</b>		
V <sub>ah</sub>		0.36
V <sub>ha</sub>		0.69
<b>Coefficient of Thermal Expansion</b>		
Axial	<b>in/in/°F</b>	11.0 x 10 <sup>-6</sup>
	<b>mm/mm/°C</b>	19.8 x 10 <sup>-6</sup>
Hoop	<b>in/in/°F</b>	6.2 x 10 <sup>-6</sup>
	<b>mm/mm/°C</b>	11.2 x 10 <sup>-6</sup>
<b>Thermal Conductivity</b>	<b>BTU/ft·hr·°F</b>	0.23
	<b>W/m·°C</b>	0.4
<b>Specific Gravity</b>		2
<b>Absolute Roughness</b>	<b>in</b>	0.00021
	<b>mm</b>	0.00533
<b>Hazen-Williams Coefficient</b>		150

\* Ambient standard laboratory testing

## Performance Ratings vs. Temperature

<b>ASTM D 2992-B</b>		<b>Anhydride</b>	<b>Aliphatic Amine</b>	<b>Aromatic Amine</b>
150°F (65.6°C) 20 Year Life, LCL (Lower Confidence Limit)	<b>psi</b>	21,400	18,008	18,008
	<b>MPa</b>	147.5	124.0	124.0

## Joining System Information

<b>Pipe Size</b>	<b>Thread Type</b>	<b>Pin Upset O.D.</b>		<b>Thread Length</b>		<b>Make Up Length Loss</b>		<b>O-Ring Dash Number</b>
		<b>in</b>	<b>mm</b>	<b>in</b>	<b>mm</b>	<b>in</b>	<b>mm</b>	
2	CEN	2.81	71.4	4.9	125.0	4.9	125.0	141
2	SP	2.78	70.6	4.5	114.3	4.5	114.3	226
3	CEN	3.99	101.3	4.9	125.0	4.9	125.0	152
3	SP	3.96	100.6	4.5	114.3	4.5	114.3	236
4	SP	4.96	126.0	4.5	114.3	4.5	114.3	244
4	SPH	5.07	128.7	4.5	114.3	4.5	114.3	346
6	SS HP	7.74	196.6	9.0	228.0	8.8	222.3	439
6	SPH	7.39	187.7	6.0	152.4	6.0	152.4	438
8	SS HP	9.42	239.3	9.0	228.6	8.8	222.3	445
8	SS	8.94	227.1	5.0	127.0	4.8	120.7	369
10	SS HP	11.98	304.3	9.0	228.6	8.8	222.3	450
10	SS	11.40	289.6	6.2	156.5	5.4	137.9	449
12	SS HP	13.92	353.5	9.0	228.6	8.8	222.3	454
12	SS	13.44	341.4	6.9	174.0	6.1	155.2	453

## Pipe Capacity

<b>Pipe Size</b>	<b>Inside Diameter</b>		<b>Capacity</b>	
	<b>in</b>	<b>mm</b>	<b>bbls/1,000 ft</b>	<b>m3/km</b>
2	1.95	49.5	3.7	1.9
2	2.23	56.6	4.8	2.5
3	3.00	76.2	8.7	4.6
3	3.35	85.1	10.9	5.7
4	3.91	99.3	14.9	7.7
6	5.85	148.6	33.2	17.3
6	6.10	154.9	36.1	18.9
8	7.49	190.2	54.5	28.4
8	7.74	196.6	58.2	30.4
10	9.84	249.9	94.1	49.1
12	11.81	300.0	135.5	70.7

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