

WELLSTRONG® Casing

HIGH PRESSURE DOWNHOLE CASING



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1. PRODUCT

Wellstrong® Casing is a high-pressure casing product designed for downhole well support, protection of producing formations, and prevention of groundwater contamination. With a standard product length of 12 meters (39.4 feet), Wellstrong® Casing provides a fast and efficient installation along the casing string.

Wellstrong® Casing ensures the integrity of a well as it offers the following advantages:

- Chemical/Corrosion Resistance (Resistant to aggressive soils and ground water, H₂S, CO₂, etc.)
- High pressure capability
- Low Costs (Minimal maintenance; no coating or cathodic protection needed)
- Ease of Installation
- Long Term Reliability

Wellstrong® Casing is the ultimate solution for the replacement of corroded steel casings due to its high chemical resistance properties. Wellstrong® casing systems are recommended for use in applications like:

- Production wells (oil, gas, thermal)
- Disposal wells (salt water, chemical effluent, and waste)
- Injection wells (salt water, CO₂)
- Municipal and commercial water wells

2. PRODUCT DESCRIPTION

- Metric Inside Diameters: 150 up to 600 mm (6" up to 24" Nominal Sizes)
- Collapse Pressure – Up to 2,500 psi (17.2 MPa)
- Internal Pressure – Up to 2,000 psi (13.8 MPa)
- Temperature – Up to 212°F (100°C)
- Resin System – Aromatic Amine Cured Epoxy
- Joining System – FPI's patented 4Rd, Threaded and Coupled Connection (T&C) Pin-Pin Pipe
- Product Length – 12 meters (39.4 feet)
- Shop / Mill Hydrostatic Test – 100% of pipes tested at 1.25 times the pressure rating



3. TYPICAL PROPERTIES

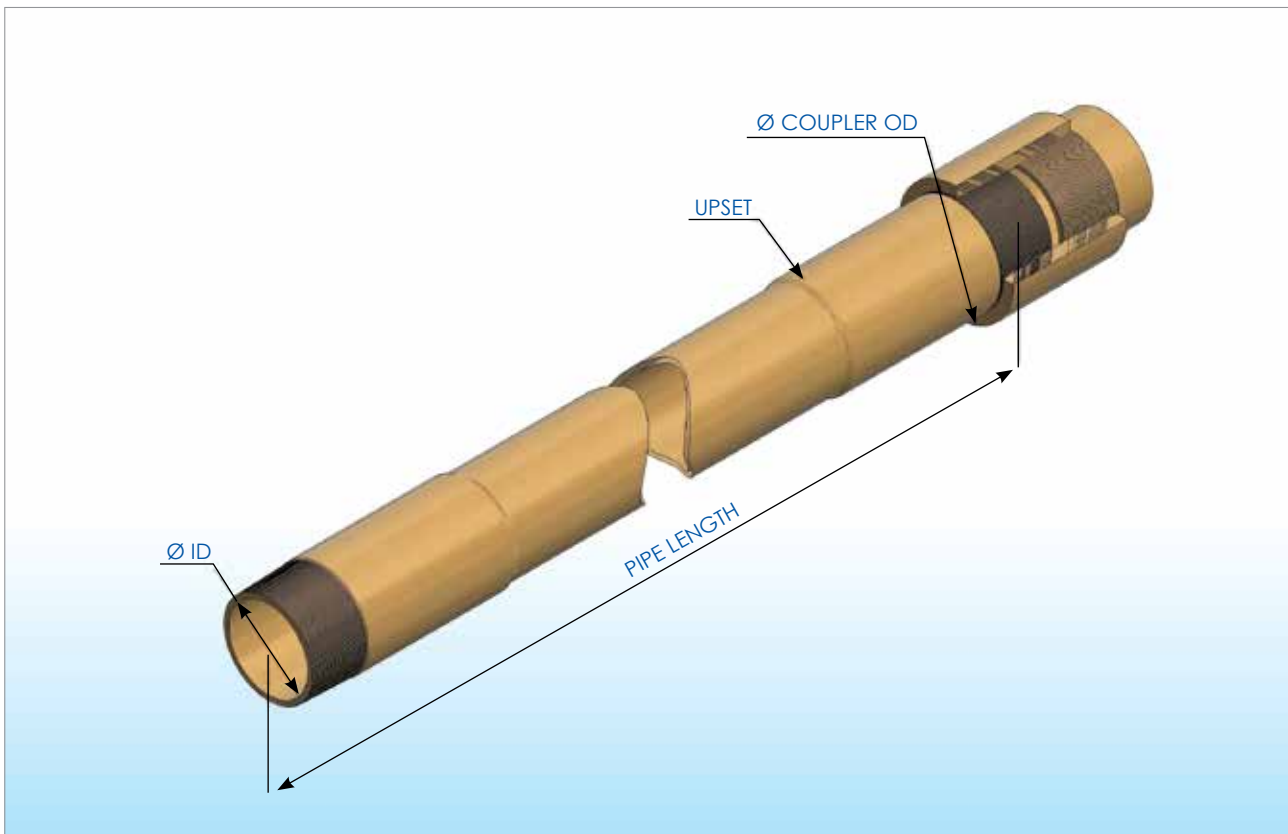
The below mechanical properties have been measured at a standard lab temperature of 73.5°F (23°C), unless specified otherwise.

Property	Test Method	Value	Units	Value	Units
Hoop tensile stress (hydrostatic at weep, bi-axial)	ASTM D1599	250	N/mm ²	36,250	psi
Axial tensile stress (mechanical, uni-axial)	ASTM D2105	65	N/mm ²	9,400	psi
Axial tensile modulus	ASTM D2105	10,500	N/mm ²	1.5	psi(x106)
Coefficient of linear thermal ex-pansion	ASTM D696	2.0 - 2.2	mm/mm/°C (x10 ⁻⁵)	1.1 - 1.2	in/in/°F
Thermal Conductivity	ASTM C177	0.29	W/m/K	0.17	BTU/ft/hour/°F
Specific Heat	-	921	J/kg/K	0.22	BTU/lb/°F
Glass Content (by mass)	ASTM D2584	75 ± 5 (for pipe) 52 ± 6 (for fittings)	%	75 ± 5 (for pipe) 52 ± 6 (for fittings)	%
Glass Content (by volume)	ASTM D2584	58 ± 7 (for pipe) 52 ± 6 (for fittings)	%	58 ± 7 (for pipe) 52 ± 6 (for fittings)	%
Density of the laminate	ASTM D792	1,850	kg/m ³	0.07	lb/in ³
Specific Gravity	ASTM D792	1.85	-	1.85	-
Barcol Hardness	ASTM D2583	35	-	35	-
Absolute pipe wall roughness	-	0.01	mm	0.0004	inch
Minimum flow coefficient (C)	Hazen Williams	150	-	150	-
Surface Roughness parameter (e)	AWWA M45	5.18	m (x10 ⁻⁶)	1.70	ft (x10 ⁻⁵)
Roughness coefficient (n)	Manning	0.009	-	0.009	-

4. PRODUCT DESIGN AND RANGE

Wellstrong® Casing design is based on established criteria for downhole applications taking into consideration the collapse pressure as the controlling parameter. The pressure ratings and dimensions provided in this catalogue are defined for a temperature of 150°F (65°C). For applications requiring higher pressures and temperatures; contact Future Pipe Industries to obtain a suitable/custom product class.

Furthermore, applications engineering shall be applied on a case-by-case basis to ensure the well integrity and the optimal performance of the Wellstrong® Casing product.



Drift diameter represents the effective/guaranteed inner diameter through which the outer diameter of an equipment or smaller string can pass. i.e. Equipment/strings with a larger outer diameter than the drift diameter should not be run into the existing well/string.

Wellstrong® Casing - Standard Product Range

50 Collapse Rating

50 psi (0.35 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
20	500	19.685	496.8	19.559	521.7	20.539	652.9	25.703	123,458	55,999	600	4.1
24	600	23.622	596.8	23.496	626.0	24.647	775.3	30.523	177,779	80,639	600	4.1

100 Collapse Rating

100 psi (0.69 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
20	500	19.685	496.8	19.559	527.5	20.768	667.8	26.292	158,166	71,743	750	5.2
24	600	23.622	596.8	23.496	632.9	24.917	793.1	31.224	227,759	103,310	750	5.2

150 Collapse Rating

150 psi (1.03 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
20	500	19.685	496.8	19.559	531.7	20.933	667.8	26.292	183,212	83,103	750	5.2
24	600	23.622	596.8	23.496	637.9	25.114	793.1	31.224	263,825	119,669	750	5.2

200 Collapse Rating

200 psi (1.38 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
16	400	15.748	396.8	15.622	428.1	16.854	568.3	22.373	130,289	59,098	1,000	6.9
18	450	17.717	446.8	17.591	481.6	18.961	625.4	24.622	164,897	74,796	1,000	6.9
20	500	19.685	496.8	19.559	535.0	21.063	667.8	26.292	203,577	92,341	750	5.2
24	600	23.622	596.8	23.496	641.9	25.272	793.1	31.224	293,150	132,971	750	5.2

250 Collapse Rating

250 psi (1.72 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
12	300	11.811	296.8	11.685	323.0	12.717	446.2	17.565	79,587	36,100	1,100	7.6
14	350	13.780	346.8	13.654	376.7	14.831	513.8	20.230	108,327	49,136	1,100	7.6
16	400	15.748	396.8	15.622	430.4	16.945	568.3	22.373	141,488	64,178	1,000	6.9
18	450	17.717	446.8	17.591	484.1	19.059	625.4	24.622	179,071	81,225	1,000	6.9
20	500	19.685	496.8	19.559	537.9	21.177	667.8	26.292	221,076	100,278	750	5.2
24	600	23.622	596.8	23.496	645.3	25.405	793.1	31.224	318,349	144,401	750	5.2

300 Collapse Rating

300 psi (2.07 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	162.5	6.398	248.7	9.790	21,294	9,659	1,150	7.9
8	200	7.874	196.8	7.748	216.5	8.524	309.5	12.186	37,856	17,171	1,150	7.9
10	250	9.843	246.8	9.717	270.5	10.650	384.7	15.145	59,151	26,830	1,150	7.9
12	300	11.811	296.8	11.685	324.5	12.776	451.2	17.764	85,177	38,636	1,150	7.9
14	350	13.780	346.8	13.654	378.4	14.898	519.7	20.460	115,936	52,587	1,150	7.9
16	400	15.748	396.8	15.622	432.4	17.024	568.3	22.373	151,426	68,686	1,000	6.9
18	450	17.717	446.8	17.591	486.4	19.150	625.4	24.622	191,649	86,930	1,000	6.9
20	500	19.685	496.8	19.559	540.4	21.276	667.8	26.292	236,603	107,321	750	5.2

400 Collapse Rating

400 psi (2.76 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	163.8	6.449	252.8	9.951	23,726	10,762	1,250	8.6
8	200	7.874	196.8	7.748	218.3	8.594	314.6	12.387	42,179	19,132	1,250	8.6
10	250	9.843	246.8	9.717	272.7	10.736	392.0	15.434	65,904	29,894	1,250	8.6
12	300	11.811	296.8	11.685	327.1	12.878	459.9	18.105	94,902	43,047	1,250	8.6
14	350	13.780	346.8	13.654	381.5	15.020	529.7	20.854	129,172	58,592	1,250	8.6
16	400	15.748	396.8	15.622	435.9	17.161	568.3	22.373	168,715	76,528	1,000	6.9
18	450	17.717	446.8	17.591	490.3	19.303	625.4	24.622	213,530	96,855	1,000	6.9
20	500	19.685	496.8	19.559	544.7	21.445	667.8	26.292	263,617	119,575	750	5.2

500 Collapse Rating

500 psi (3.45 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	165.0	6.496	256.2	10.088	25,825	11,714	1,350	9.3
8	200	7.874	196.8	7.748	219.7	8.650	319.0	12.559	45,911	20,825	1,350	9.3
10	250	9.843	246.8	9.717	274.5	10.807	392.0	15.434	71,736	32,539	1,250	8.6
12	300	11.811	296.8	11.685	329.3	12.965	459.9	18.105	103,300	46,856	1,250	8.6

600 Collapse Rating

600 psi (4.14 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	165.9	6.531	259.3	10.208	27,696	12,563	1,450	10.0
8	200	7.874	196.8	7.748	221.1	8.705	322.8	12.710	49,237	22,333	1,450	10.0
10	250	9.843	246.8	9.717	276.1	10.870	392.0	15.434	76,933	34,896	1,250	8.6

750 Collapse Rating

750 psi (5.17 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	167.3	6.587	263.3	10.366	30,198	13,697	1,550	10.7
8	200	7.874	196.8	7.748	222.8	8.772	327.9	12.908	53,684	24,351	1,550	10.7
10	250	9.843	246.8	9.717	278.4	10.961	392.0	15.434	83,882	38,048	1,250	8.6

1,000 Collapse Rating

1,000 psi (6.89 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	169.2	6.661	269.0	10.589	33,813	15,337	1,750	12.1
8	200	7.874	196.8	7.748	225.3	8.870	335.0	13.189	60,111	27,266	1,750	12.1

1,250 Collapse Rating

1,250 psi (8.62 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	170.8	6.724	273.8	10.779	36,962	16,766	1,900	13.1
8	200	7.874	196.8	7.748	227.5	8.957	341.1	13.428	65,711	29,806	1,900	13.1

1,500 Collapse Rating

1,500 psi (10.34 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	172.2	6.780	278.0	10.947	39,791	18,049	2,000	13.8
8	200	7.874	196.8	7.748	229.4	9.031	346.4	13.639	70,740	32,087	2,000	13.8

1,750 Collapse Rating

1,750 psi (12.07 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	173.5	6.831	278.0	10.947	42,383	19,224	2,000	13.8
8	200	7.874	196.8	7.748	231.2	9.102	346.4	13.639	75,347	34,177	2,000	13.8

2,000 Collapse Rating

2,000 psi (13.79 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	174.7	6.878	278.0	10.947	44,790	20,316	2,000	13.8
8	200	7.874	196.8	7.748	232.8	9.165	346.4	13.639	79,626	36,118	2,000	13.8

2,250 Collapse Rating

2,250 psi (15.51 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	175.9	6.925	278.0	10.947	47,049	21,341	2,000	13.8
8	200	7.874	196.8	7.748	234.3	9.224	346.4	13.639	83,642	37,940	2,000	13.8

2,500 Collapse Rating
2,500 psi (17.24 MPa)

NPS	Pipe Inside Diameter		Drift Diameter		Outside Diameter		Coupler Outside Diameter		Tensile Rating		Internal Pressure Rating	
	in	mm	in	mm	in	mm	in	mm	in	lbf	kgs	psi
6	150	5.906	146.8	5.780	176.9	6.965	278.0	10.947	49,186	22,310	2,000	13.8
8	200	7.874	196.8	7.748	235.7	9.280	346.4	13.639	87,442	39,663	2,000	13.8

Internal Pressure Rating (psi)		Collapse Rating Pe (psi)																
ID (mm)	NPS (inch)	50	100	150	200	250	300	400	500	600	750	1,000	1,250	1,500	1,750	2,000	2,250	2,500
150	6	•	•	•	•	•	1,150	1,250	1,350	1,450	1,550	1,750	1,900	2,000	2,000	2,000	2,000	2,000
200	8	•	•	•	•	•	1,150	1,250	1,350	1,450	1,550	1,750	1,900	2,000	2,000	2,000	2,000	2,000
250	10	•	•	•	•	•	1,150	1,250	1,250	1,250	1,250	•	•	•	•	•	•	•
300	12	•	•	•	•	1,100	1,150	1,250	1,250	•	•	•	•	•	•	•	•	•
350	14	•	•	•	•	1,100	1,150	1,250	•	•	•	•	•	•	•	•	•	•
400	16	•	•	•	1,000	1,000	1,000	1,000	•	•	•	•	•	•	•	•	•	•
450	18	•	•	•	1,000	1,000	1,000	1,000	•	•	•	•	•	•	•	•	•	•
500	20	600	750	750	750	750	750	750	•	•	•	•	•	•	•	•	•	•
600	24	600	750	750	750	750	•	•	•	•	•	•	•	•	•	•	•	•

