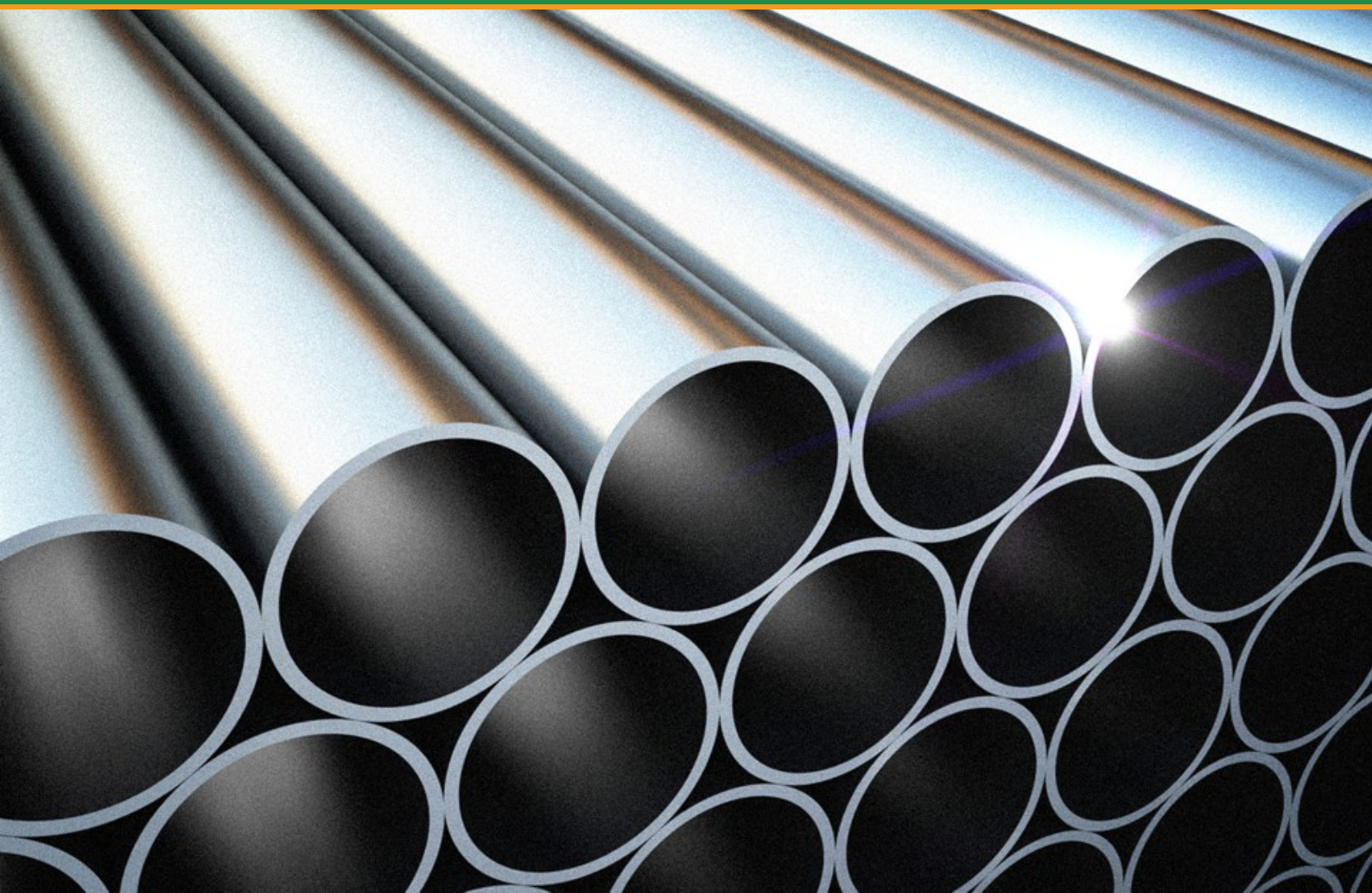




PROCESS PIPE

PIPE CATALOGUE



PIPE

S.A.N.S 62

Dimensions (in millimetres)				Masses (kilograms/metre)	
Nominal Bore	Approx. O.D.	Nominal Wall Thickness		Coated Tubes- Scrd & Socketed	
		Medium	Heavy	Medium	Heavy
6	10.2	2.00	2.65	0.410	0.496
8	13.5	2.35	2.90	0.654	0.773
10	17.2	2.35	2.90	0.858	1.03
15	21.3	2.30	2.80	1.10	1.30
20	26.9	2.30	2.80	1.42	1.69
25	33.7	2.80	3.50	2.19	2.67
32	42.4	2.80	3.50	2.80	3.43
40	48.3	2.80	3.50	3.19	3.92
50	60.3	3.30	4.00	4.57	5.49
65	76.1	3.30	4.00	5.85	7.04
80	88.9	3.50	4.30	7.49	8.89
100	114.3	3.90	4.80	10.82	12.91
125	139.7	4.30	4.80	14.31	15.92
150	165.1	4.30	4.80	17.11	19.04

Standard Lengths: Medium 6.0m
Heavy 6.0m

Notes: 1. For approximate masses of GALVANISED tubes add the following percentages to masses indicated above:

(a) Medium Tube + 5 and 3/4%

(b) Heavy Tube + 5%

2. S.A.N.S. 62 is equivalent to B.S.1387

RECOMMENDED WORKING PRESSURES

Pipes tested to 4800 kPa - hydraulic

Pipe size	Max. Working pressure in kPa/Maks Taper/parallel joint		Steam, air and gas service (260°C max.)	
	Water Service Ambient temp.		Medium	Heavy
mm	Medium	Heavy	Medium	Heavy
6	2100	2400	1050	1050
8	2100	2400	1050	1050
10	2100	2400	1050	1050
15	2100	2400	1050	1050
20	2100	2400	1050	1050
25	2100	2400	1050	1050
32	1700	2100	900	900
40	1700	2100	900	900
50	1400	1700	-	-
65	1400	1700	-	-
80	1400	1700	-	-
100	1050	1400	-	-
125	1050	1400	-	-
150	850	1050	-	-

NB: These pipes can be used for higher pressures than those above, or for special working conditions with suitable types of joint. The efficiency of taper/parallel screwed joints is highly dependent on the degree of care taken in assembly and jointing compound used. Reference to steam service applies to saturated steam only.

PIPE

S.A.N.S 719

Mass Mass of Steel Pipe in kilograms per metre

Dimensions		Wall Thickness in Millimeters					
Nominal Diameter mm	Outside Diameter mm	4.5	5.0	6.0	8.0	10.0	12.0
200	219.1	24.9	27.7	33.1	43.6	54.2	64.6
250	273.0	31.2	34.6	41.4	54.7	68.0	81.5
300	323.9	37.1	41.3	49.3	65.2	81.3	97.5
350	355.6	40.7	45.4	54.2	71.7	89.5	108.0
400	406.4	46.6	52.0	62.1	82.2	103.0	123.0
500	508.0	58.5	65.1	78.0	103.0	129.0	155.0
600	609.6	70.2	78.3	93.6	124.0	155.0	186.0
700	711.2	82.0	91.5	110.0	145.0	182.0	219.0
800	812.8		105.0	125.0	166.0	208.0	250.0
900	914.4		118.0	140.0	187.0	233.0	282.0
1000	1016.0		131.0	156.0	208.0	260.0	315.0

Standard Lengths: 6.096m and 9.144 m

NOTES: 1. Pipe outside diameters are to B.S. 534/1966; I.S.O./R336; B.S. 4504/1969; I.S.O./R2084.

2. The pipe outside diameters suit the metricated flanges of B.S. 4504/1969 and I.S.O./R2084.

Steel to S.A.N.S. 719

Test Pressure in kPA

Nominal Bore mm	Outside Diameter mm	Wall Thickness (mm)							
		4.0	4.5	5.0	6.0	8.0	10.0	12.0	14.0
200	219,1	6600	7430	8250	9900	13200	16500	19800	23100
250	273,0	5300	5960	6620	7950	10590	13240	15890	18540
300	323,9	4460	5020	5580	6700	8930	11160	13390	15630
350	355,6	4070	4580	5080	6100	8130	10170	12200	14230
400	406,4	3560	4000	4450	5340	7120	8900	10670	12450
450	457,2	3160	3560	3950	4740	6330	7910	9490	11070
500	508,0	2850	3200	3560	4270	5690	7120	8540	9960
600	609,6	2370	2670	2970	3560	4740	5930	7120	8300
700	711,2	2030	2290	2540	3010	4070	5080	6100	7120
800	812,8	1780	2000	2220	2670	3560	4450	5340	6230
900	914,4	1580	1780	1980	2370	3160	3950	4740	5540
1000	1016,0	1420	1600	1780	2140	2850	3560	4270	4980

Yield stress of steel - 300 MPa.

Test pressures above are based on stressing steel to 75% of minimum specified yield stress and are applied only to plain ended pipes.



PROCESS PIPE

PIPE

A.S.A. PIPE SCHEDULES | DIAMETERS | WALL THICKNESSES | WEIGHTS

Piping to ASTM A106 B + ANSI B36.19 + B36.10 + Inches and Metric

Inches Nominal pipe size	Metric O.D. mm	Schedule				STD AND 40S	Schedule		XS and 80S	Schedule					XXS
		10S	10	20	30		40	60		80	100	120	140	160	
1/8"	10.3	1.24 0.28	-	-	-	1.73 0.36	-	2.41 0.46	-	-	-	-	-	-	
1/4"	13.71	1.65 0.49	-	-	-	2.24 0.63	-	3.02 0.80	-	-	-	-	-	-	
3/8"	17.14	1.65 0.63	-	-	-	2.31 0.85	-	3.2 1.10	-	-	-	-	-	-	
1/2"	21.34	2.11 1.00	-	-	-	2.77 1.27	-	3.73 1.62	-	-	-	-	4.78 1.94	7.47 2.55	
3/4"	26.67	2.11 1.28	-	-	-	2.87 1.68	-	3.91 2.19	-	-	-	-	5.56 2.9	7.82 3.63	
1"	33.4	2.77 2.08	-	-	-	3.38 2.5	-	4.55 3.23	-	-	-	-	6.35 4.18	9.09 5.45	
1 1/4"	42.16	2.77 2.69	-	-	-	3.56 3.38	-	4.85 4.46	-	-	-	-	6.35 5.58	9.7 7.76	
1 1/2"	48.26	2.77 3.12	-	-	-	3.68 4.05	-	5.08 5.41	-	-	-	-	7.14 7.22	10.16 9.55	
2"	60.32	2.77 3.94	-	-	-	3.91 5.44	-	5.54 7.49	-	-	-	-	8.74 11.08	11.07 13.35	
2 1/2"	73.02	3.05 5.26	-	-	-	5.16 8.68	-	7.01 11.42	-	-	-	-	9.52 14.88	14.02 20.41	
3"	88.90	3.05 6.45	-	-	-	5.49 11.29	-	7.62 15.27	-	-	-	-	11.13 20.98	15.24 27.67	
3 1/2"	101.60	3.05 7.4	-	-	-	5.74 13.37	5.74 13.57	8.08 18.63	-	-	-	-	-	-	
4"	114.30	3.05 8.34	-	-	-	6.02 16.07	-	8.56 22.31	-	-	11.13 28.25	-	13.49 33.48	17.12 41.02	
5"	141.30	3.40 11.56	-	-	-	6.55 21.78	-	9.52 30.95	-	-	12.70 40.24	-	15.88 49.11	19.05 57.42	
6"	168.30	3.40 13.82	-	-	-	7.11 28.26	-	10.97 42.56	-	-	14.47 54.20	-	18.26 67.22	21.95 79.18	
8"	219.10	3.76 19.94	-	6.35 33.03	7.04 36.72	8.18 42.53	10.31 52.88	12.70 64.63	15.09 75.80	18.26 90.32	20.62 101.04	23.01 111.32	22.22 107.87		
10"	273.00	4.19 27.83	-	6.35 41.76	7.8 51.00	9.27 60.29	12.7 81.46	12.70 81.46	15.09 95.95	18.26 114.59	21.44 132.74	25.40 154.94	28.58 172.14	25.40 154.94	
12"	323.85	4.57 36.00	-	6.35 49.81	8.38 65.07	9.52 73.82	10.31 79.67	14.27 108.97	12.70 97.36	17.47 131.70	21.44 159.52	25.40 186.77	28.58 206.96	33.34 238.11	25.40 186.77
14"	355.60	4.78 41.18	6.35 54.63	7.92 67.95	9.52 81.28	9.52 81.28	11.13 94.31	15.09 126.49	12.70 107.28	19.05 157.94	23.82 194.82	27.79 224.42	31.75 253.14	35.71 281.38	-
16"	406.40	4.78 47.33	6.35 62.58	7.92 77.88	9.25 93.21	9.52 93.21	12.70 123.18	16.64 159.98	12.70 123.18	21.44 203.16	26.19 245.32	30.96 286.44	36.52 332.62	40.49 364.85	-
18"	457.20	4.78 53.18	6.35 70.53	7.92 87.81	11.13 122.12	9.52 105.14	14.27 155.90	19.05 205.62	12.70 139.07	23.82 254.19	29.36 309.44	34.92 363.19	39.69 408.01	45.24 459.18	-
20"	508.00	5.54 68.50	6.35 78.46	9.52 117.07	12.7 154.97	9.52 117.07	15.09 183.12	20.62 247.79	12.70 154.97	26.19 310.90	32.54 381.04	38.10 440.93	44.45 587.54	50.01 564.14	-
22"	558.80	-	6.35 86.49	9.52 129.01	12.7 171.01	9.52 129.01	-	22.22 294.06	12.70 171.01	28.60 373.58	34.92 451.14	41.28 526.70	47.62 600.27	53.98 671.85	-
24"	609.60	6.35 94.37	6.35 94.37	9.52 140.94	14.27 209.54	9.52 140.94	17.48 254.74	24.61 354.64	12.70 186.75	30.96 441.1	38.89 546.92	46.02 639.18	52.3 718.94	59.54 806.61	-
26"	660.40	-	7.92 127.58	12.7 202.65	-	9.52 152.87	-	-	12.70 202.65	-	-	-	-	-	-
28"	711.20	-	7.92 137.50	12.7 218.51	15.88 271.9	9.52 164.63	-	-	12.70 218.51	-	-	-	-	-	-
30"	762.00	-	7.92 147.33	12.7 234.44	15.88 291.81	9.52 176.73	-	-	12.70 234.44	-	-	-	-	-	-
32"	812.80	-	7.92 156.58	12.7 250.33	15.88 311.67	9.52 188.66	17.48 352.28	-	12.70 250.33	-	-	-	-	-	-
34"	863.60	-	7.92 166.82	12.7 266.35	15.88 331.54	9.52 200.59	17.48 363.91	-	12.70 266.35	-	-	-	-	-	-
36"	914.40	-	7.92 177.12	12.7 282.12	15.88 351.41	9.52 212.52	19.05 420.17	-	12.70 282.12	-	-	-	-	-	-
38"	965.2	-	-	-	-	9.52 224.42	-	-	12.70 298.23	-	-	-	-	-	-
40"	1,016.00	-	-	-	-	9.52 236.35	-	-	12.70 314.14	-	-	-	-	-	-
42"	1,066.80	-	-	-	-	9.52 248.34	-	-	12.70 330.00	-	-	-	-	-	-
44"	1,117.6	-	-	-	-	9.52 260.21	-	-	12.70 345.95	-	-	-	-	-	-

Note: bold-faced = wall thickness lean-faced = weight kg/m

PIPE

ALLOWABLE WORKING PRESSURES FOR PETROLEUM REFINERY PIPING & CARBON STEEL WELDING FITTINGS

(These values also apply to ASTM A106, Grade B Seamless Pipe)

Inches Nominal pipe size	WT* or Sch. No		Wall Thickness	Allowable working pressures in kPa For Temperatures (in Deg. F.) not to exceed				
	WT*	Sch No		-20 to 100	300	500	650	750
1/2"	ST	40	0.109	15582	14134	12755	11721	10135
3/4"	ST	40	0.113	13376	12135	10962	10066	8687
	XS	80	0.154	23856	21649	19512	17857	15444
1"	ST	40	0.133	14548	13169	11928	10894	9446
	XS	80	0.179	23925	21718	19581	17995	15513
	XXS	160	0.250	39438	35852	32267	29578	25579
1 1/4"	ST	40	0.140	12479	11376	10204	9377	8136
	XS	80	0.191	20684	18753	16892	15513	13375
	XXS	160	0.250	30543	27717	24959	22890	19788
1 1/2"	ST	40	0.145	11538	10480	9446	8687	7515
	XS	80	0.200	19167	17443	15720	14410	12410
	XXS	160	0.231	31026	28130	25372	23304	20063
2"	ST	40	0.154	10135	9239	8342	7653	6619
	XS	80	0.218	17168	15582	14065	12893	11169
	XXS	160	0.343	31716	28820	25993	23787	20546
2 1/2"	ST	40	0.203	12755	11583	10411	9584	8274
	XS	80	0.276	19443	17650	15927	14617	12617
	XXS	160	0.375	28958	26269	23649	21718	18753
3"	ST	40	0.216	11307	10273	9308	8480	7377
	XS	80	0.300	17650	15996	14410	13238	11445
	XXS	160	0.438	28475	25855	23235	21373	18409
3 1/2"	ST	40	0.226	10549	9584	8618	7929	6826
	XS	80	0.318	16547	15030	13514	12410	10687
	XXS	160	0.636	38886	35301	31784	29164	25166
4"	ST	40	0.237	9928	9032	8136	7446	6481
	XS	80	0.337	15720	14272	12893	11790	10204
	XXS	160	0.531	27441	24959	22447	20615	17788
5"	ST	40	0.258	8963	8136	7308	6757	5791
	XS	80	0.375	14410	13100	11790	10825	9308
	XXS	160	0.625	26544	24131	21718	19926	17237
6"	ST	40	0.280	8342	7584	6826	6274	5447
	XS	80	0.432	14272	12962	11652	10687	9239
	XXS	160	0.718	25924	23511	21167	19443	16823
8"	ST	40	0.322	7584	6895	6205	5723	4964
	XS	80	0.500	12893	11721	10549	9652	8342
	XXS	160	0.875	24545	22270	20063	18409	15927
10"	ST	40	0.365	7101	6412	5791	5309	4619
	XS	60	0.500	10273	9308	8411	7722	6688
	XXS	160	1.125	25786	23442	21098	19374	16685

PIPE

ALLOWABLE WORKING PRESSURES CONTINUED

Inches Nominal pipe size	WT* or Sch. No		Wall Thickness	Allowable working pressures in kPa For Temperatures (in Deg. F.) not to exceed				
	WT*	Sch No		-20 to 100	300	500	650	750
12"	ST	160	0.375	6136	5585	5033	4619	3999
	XS		0.500	8618	7860	7032	6481	5585
			0.131	25510	23167	20891	19167	16547
14"	ST	10	0.250	3351	3047	2744	2516	2172
	XS	30	0.375	5585	5102	4619	4206	3654
			0.500	7860	7101	6412	5860	5102
16"	ST	10	0.250	2937	2668	2406	2206	1903
	XS	30	0.375	4895	4481	3999	3654	3158
		40	0.500	6826	6205	5585	5171	4413
18"	ST	10	0.250	2606	2372	2137	1958	1689
	XS		0.375	4344	3930	3585	3240	2799
			0.500	6067	5516	4964	4550	3930
20"	ST	10	0.250	2344	2130	1917	1758	1524
	XS	20	0.375	3930	3585	3171	2909	2510
		30	0.500	5447	4964	4481	4137	3585
22"	ST		0.250	2123	1930	1737	1593	1379
	XS		0.375	3516	3192	2875	2641	2282
			0.500	4964	4481	4068	3723	3199
24"	ST	10	0.250	1944	1765	1593	1462	1262
	XS	20	0.375	3227	2930	2641	2420	2096
			0.500	4550	4137	3723	3385	2923
26"	ST		0.375	2978	2710	2441	2234	1930
	XS		0.500	4206	3792	3406	3123	2703
30"	ST	20	0.375	2579	2344	2110	1937	1675
	XS		0.500	3654	3268	2944	2703	2330
34"	ST		0.375	2275	2068	1861	1710	1475
	XS		0.500	3171	2882	2599	2379	2055
36"	ST		0.375	2137	1944	1751	1606	1386
	XS		0.500	2992	2723	2448	2248	1944
42"	ST		0.375	1834	1668	1503	1379	1193
	XS		0.500	2565	2330	2103	1924	1662

Above values in kPa to conform with South African metric system.

All dimensions are in inches.

*LW - Light Weight (same thickness as 10S to 12" size inclusive)

ST - Standard Wall

XS - Extra Strong Wall

XXS - Double Extra Strong Wall

Numbers are Schedule Numbers.

The above tabular values are rounded off to the next higher unit of 10 for pressures 500 p.s.i. and higher. Interpolation is permissible for intermediate temperatures.

The allowable working pressures were calculated by the following formula given in the Code for Pressure Piping, ASA B31.3-1959, par, 304 1.2,

$$P = \frac{2 S t E}{D_o y}$$

$$D_o = \text{outside diameter of pipe, inches}$$

where P = internal design pressure, psig

S = applicable allowable stress, psi

D_o = outside diameter of pipe, inches

E = longitudinal weld joint factor = 1,0

t = t_m - C = design thickness, inches

t_m = minimum thickness for the pipe selected considering manufacturer's tolerance = 12 2/2 % less than the thickness shown in the table.

C = mechanical, corrosion and erosion allowance in inches = 0.05" in above calculations.

y = a coefficient = 0.4 for ferritic steels to 900 F

The allowable working stresses were obtained from the Code for Pressure Piping, ASA B31.3-1959, Table 302.3 1A.

Plant process piping: It is recommended that the allowable working pressures listed above be used also for process piping in plants other than oil refineries except where such piping is expressly covered in the ASME Boiler and Pressure Vessel Code or other sections of the Code for Pressure Piping. Interpretations of Code for Pressure Piping, Case No. 49, states that chemical process piping may be designed in accordance with the requirements of ASA B31.3, Petroleum Refinery Piping.