

CUSTOMISED SOLUTIONS WORLDWIDE

BENTELER 

Distribution



HOT FINISHED SEAMLESS



CHEMICAL COMPOSITION (LADLE ANALYSIS)

SPECIFICATION	C max%	Si max%	min% max%	Mn min% max%	P max%	S max%	Al%	N%
EN 10297-1 E355	0.22	-	0.55	- 1.60	0.030	0.035		
EN 10210-1 S355J2H (≤ 40 mm ≤ 65mm)	0.22	-	0.55	- 1.60	0.035	0.035		
DIN 2448/1629 - ST52	0.22	-	0.55	- 1.60	0.040	0.035		
DIN 2448/17121 - ST52-3N	0.20	-	0.55	- 1.60	0.040	0.040	0.020 min	0.012 max
BS3602/1987 GRADE 430	0.21	0.10	0.35	0.40 1.20	0.035	0.035	0.060 max	-

MECHANICAL PROPERTIES AT ROOM TEMPERATURE

SPECIFICATION	Tensile strength minimum Rm in N/mm ²	Yield strength minimum ReH in N/mm ²	Elongation %		
			Longitudinal	Transverse	
EN 10297-1 E355	≤ 16mm >16mm ≤40mm >40mm ≤65mm >65mm ≤100mm	490 490 490 470	≤ 16mm >16mm ≤40mm >40mm ≤65mm >65mm ≤80mm >80mm ≤100mm	355 345 335 315 295	20 18
EN 10210-1 S355J2H	< 3mm ≥ 3mm ≤65mm	510 - 680 490 - 630	≤ 16mm >16mm ≤40mm >40mm ≤65mm	355 345 335	Minimum percentage elongation LO = 5.65√S0 Longitudinal Transverse
DIN 2448/1629 ST52		500 - 650	≤16mm >16mm ≥40mm > 40mm ≤65mm	355 345 335	
DIN 2448/17121 ST52-3N		490 - 630	≤16mm >16mm ≥40mm > 40mm ≤ 65mm > 65mm	355 345 335 285	
BS3602/1987 GRADE 430		430 - 570	≤16mm >16mm ≥40mm > 40mm ≤65mm	275 265 255	

TOLERANCES

SPECIFICATION	Outside diameter	Wall thickness to outside diameter ratio		
		≤ 0.025	> 0.025 ≤ 0.050	> 0.050
EN 10297-1 E355 (Dia ≤ 219.1 mm)	± 1% or ± 0.5mm whichever is the greater	± 12.5% or ± 0.4 mm whichever is the greater		
EN 10297-1 E355 (Dia > 219.1 mm)	± 1%	± 20%	± 15%	± 12.5%
EN 10210-1 S355 J2H	± 1% with a min. of ± 0.5mm and a maximum of ± 10mm	2% for hollow sections having a diameter to thickness ratio not exceeding 100		
DIN 2448/1629 - ST52.0	± 1% with a min. of ± 0.5mm	See chart below		
DIN 2448/ 17121 - ST52.3N	± 1% with a min. of ± 0.5mm	See chart below		
BS3602/1987 GRADE 430	± 1% with a min. of ± 0.5mm	Outside dia ≤ 3% ± 15% Over 3% upto 10% of dia. ± 12.5% Over 10% for dia's ≤ 168.3mm ± 12% For dia's over 168.3 mm ± 10%		

DIN 2448 Permissible deviation in wall thickness for outside diameters d_s

d ≤ 130mm			130mm < d _s ≤ 320mm and wall thickness s			320mm < d _s ≤ 660mm		
≤ 2.s _n	2.s _n < s ≤ 4.s _n	> 4.s _n	≤ 0.05d _s	0.05d _s < s ≤ 0.11 d _s	> 0.11 d _s	≤ 0.05 d _s	0.05 d _s < s ≤ 0.09 d _s	> 0.09 d _s
+15%	+12.5%	±9%	+17.5%	±12.5%	±10%	+20%	+15%	+12.5%
-10%	-10%		-12.5%			-15%	-12.5%	-10%

Note s_n is the standard wall thickness as specified in DIN 2448

BS3602/1987 Grade 430
BS6323 part 3 HFS 5/DIN 2448/1629 ST 52.0
DIN 2448/1629 ST 37.0
DIN 2448/1629 ST 52.3N

= for pressure purposes (this specification supersedes BS3602/410)
= for general mechanical purposes
= for general pressure and mechanical purposes
= Normalised & Charpy impact tested for special applications





**METRIC
(IMPERIAL)**

OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	
10.2 (13/32)	1.8	0.373	26.9 (1 1/16)	7.1	3.47	48.5 (1 29/32)	7.1	6.55	
	2.0	0.404		8.0	7.20		8.0	7.20	
	2.3	0.448		8.8	7.75		8.8	7.75	
	2.6	0.487		10.0	8.51		10.0	8.51	
13.5 (17/32)	2.0	0.567	30.0 (1 3/16)	2.9	1.94		11.0	9.09	11.0
	2.3	0.635		3.2	2.11		12.5	9.86	12.5
	2.6	0.669		3.6	2.34		2.9	3.25	2.9
	2.9	0.758		4.0	2.56		3.2	3.56	3.2
	3.2	0.813		4.5	2.83		3.6	3.97	3.6
	3.6	0.879		5.0	3.08		4.0	4.37	4.0
16.0 (5/8)	2.0	0.691	31.8 (1 1/4)	5.6	3.37		4.5	4.86	4.5
	2.3	0.777		6.3	3.68		5.0	5.34	5.0
	2.6	0.859		7.1	4.01	5.6	5.90	5.6	
	2.9	0.937		8.0	4.34	6.3	6.53	6.3	
	3.2	1.010		8.8	4.60	7.1	7.21	7.1	
	3.6	1.100		2.9	2.07	8.0	7.95	8.0	
17.2 (11/6)	4.0	1.180		3.2	2.26	8.8	8.57	8.8	
	2.0	0.750		3.6	2.50	10.0	9.45	10.0	
	2.3	0.845		4.0	2.74	11.0	10.10	11.0	
	2.6	0.936		4.5	3.03	12.5	11.00	12.5	
	2.9	1.020		5.0	3.30	2.9	3.44	2.9	
	3.2	1.100		5.6	3.62	3.6	4.21	3.6	
	3.6	1.210	6.3	3.96	4.0	4.64	4.0		
	4.0	1.300	7.1	4.32	4.5	5.16	4.5		
19.0 (3/4)	4.5	1.410	8.0	4.70	5.0	5.67	5.0		
	2.3	0.947	8.8	4.99	5.6	6.27	5.6		
	2.6	1.050	2.9	2.20	6.3	6.94	6.3		
	2.9	1.150	3.2	2.41	7.1	7.69	7.1		
	3.2	1.250	3.6	2.67	8.0	8.48	8.0		
	3.6	1.370	4.0	2.93	8.8	9.16	8.8		
	4.0	1.480	4.5	3.24	10.0	10.10	10.0		
	4.5	1.610	5.0	3.54	11.0	10.90	11.0		
	5.0	1.730	5.6	3.88	12.5	11.90	12.5		
	20.0 (25/32)	2.3	1.00	7.1	4.66	14.2	12.90	14.2	
2.6		1.12	8.0	5.07	2.9	3.65	2.9		
2.9		1.22	8.8	5.40	3.2	4.01	3.2		
3.2		1.33	10.0	5.84	3.6	4.47	3.6		
3.6		1.46	2.9	2.30	4.0	4.93	4.0		
4.0		1.58	3.2	2.51	4.5	5.49	4.5		
4.5		1.72	3.6	2.79	5.0	6.04	5.0		
5.0		1.85	4.0	3.06	5.6	6.68	5.6		
21.3 (27/32)		2.3	1.08	4.5	3.38	6.3	7.41	6.3	
		2.6	1.20	5.0	3.70	7.1	8.21	7.1	
	2.9	1.32	5.6	4.06	8.0	9.08	8.0		
	3.2	1.43	6.3	4.46	8.8	9.81	8.8		
	3.6	1.57	7.0	4.89	10.0	10.90	10.0		
	4.0	1.71	8.0	5.33	11.0	11.70	11.0		
	4.5	1.86	8.8	5.69	12.5	12.80	12.5		
	5.0	2.01	2.9	2.51	14.2	13.90	14.2		
	25.0 (31/32)	5.6	2.17	3.2	2.75	3.2	4.25	3.2	
		2.3	1.29	3.6	3.05	3.6	4.74	3.6	
2.6		1.44	4.0	3.35	4.0	5.23	4.0		
2.9		1.58	4.5	3.72	4.5	5.83	4.5		
3.2		1.72	5.0	4.07	5.0	6.41	5.0		
3.6		1.90	5.6	4.47	5.6	7.10	5.6		
4.0		2.07	6.3	4.93	6.3	7.88	6.3		
4.5		2.28	7.1	5.41	7.1	8.74	7.1		
5.0		2.47	8.0	5.92	8.0	9.67	8.0		
25.4 (1.0)		5.6	2.68	8.8	6.34	8.8	10.50	8.8	
	6.3	2.92	10.0	6.91	10.0	11.60	10.0		
	2.3	1.31	11.0	7.32	11.0	12.50	11.0		
	2.6	1.46	2.9	2.82	12.5	13.70	12.5		
	2.9	1.61	3.2	3.09	14.2	15.0	14.2		
	3.2	1.75	3.6	3.44	16.0	16.20	16.0		
	3.6	1.94	4.0	3.79	3.2	4.51	3.2		
	4.0	2.14	4.5	4.21	3.6	5.03	3.6		
	4.5	2.32	5.0	4.61	4.0	5.55	4.0		
	26.9 (1 1/16)	5.0	2.70	5.6	5.08	4.5	6.19	4.5	
5.6		2.94	6.3	5.61	5.0	6.82	5.0		
6.3		3.20	7.1	6.18	5.6	7.55	5.6		
2.3		1.31	8.0	6.79	6.3	8.39	6.3		
2.6		1.46	8.8	7.29	7.1	9.32	7.1		
2.9		1.61	10.0	7.99	8.0	10.30	8.0		
3.2		1.87	11.0	8.52	8.8	11.20	8.8		
3.6		2.07	2.9	2.98	10.0	12.40	10.0		
4.0		2.26	3.2	3.26	11.0	13.40	11.0		
31.8 (1 1/4)		4.5	2.49	3.6	3.63	12.5	14.70	12.5	
	5.0	2.70	4.0	4.00	14.2	16.10	14.2		
	5.6	2.94	4.5	4.44	16.0	17.50	16.0		
	6.3	3.20	5.0	4.87	17.5	18.50	17.5		
	2.9	2.07	5.6	5.37	3.2	4.76	3.2		
	3.2	2.26	6.3	5.94	3.6	5.32	3.6		

**HOT
FINISHED
SEAMLESS**

**METRIC
(IMPERIAL)**

OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	
63.5 (2 1/2)	4.0	5.87	88.9 (3 1/2)	3.6	7.57	114.3 (4 1/2)	8.8	22.9	
	4.5	6.55		4.0	8.38		10.0	25.7	
	5.0	7.21		4.5	9.37		11.0	28.0	
	5.6	8.00		5.0	10.30		12.5	31.4	
	6.3	8.89		5.6	11.50		14.2	35.1	
	7.1	9.88		6.3	12.80		16.0	38.8	
	8.0	10.90		7.1	14.30		17.5	41.8	
	8.8	11.90		8.0	16.00		20.0	46.5	
	10.0	13.20		8.8	17.40		22.2	50.5	
	11.0	14.20		10.0	19.50		25.0	55.1	
	12.5	15.70		11.0	21.10		28.0	59.6	
	14.2	17.30		12.5	23.60		30.0	62.4	
	16.0	18.70		14.2	26.20		32.0	64.9	
	17.5	19.90		16.0	28.80		36.0	69.5	
70.0 (2 3/4)	3.2	5.27	95.0 (3 3/4)	17.5	30.80	121.0 (4 3/4)	40.0	73.3	
	3.6	5.90		20.0	34.00		4.5	12.9	
	4.0	6.51		22.2	36.50		5.0	14.3	
	4.5	7.27		25.0	39.40		5.6	15.9	
	5.0	8.01		101.6 (4.0)	4.0		8.98	6.3	17.8
	6.3	9.90			4.5		10.00	7.1	19.9
	7.1	11.00			5.0		11.10	8.0	22.3
	8.0	12.20			5.6		12.30	8.8	24.3
	8.8	13.30			6.3		13.80	10.0	27.4
	10.0	14.80			7.1		15.40	11.0	29.8
	11.0	16.00			8.0		17.20	12.5	33.4
	12.5	17.70			8.8		18.70	14.2	37.4
	14.2	19.50			10.0		21.00	16.0	41.4
	16.0	21.30			11.0		22.80	17.5	44.7
17.5	22.70	12.5	25.40		20.0	49.8			
20.0	24.70	14.2	28.30		22.2	54.1			
73.0 (2 7/8)	3.2	5.51	16.0		31.20	25.0	59.2		
	3.6	6.16	17.5		33.40	28.0	64.2		
	4.0	6.81	20.0	37.00	30.0	67.3			
	4.5	7.60	22.2	39.90	32.0	70.2			
	5.0	8.38	25.0	43.20	36.0	75.5			
	5.6	9.31	108.0 (4 1/4)	28.0	46.30	127.0 (5.0)	4.5	13.6	
	6.3	10.40		4.0	9.63		5.0	15.0	
	7.1	11.50		4.5	10.80		5.6	16.8	
	8.0	12.80		5.0	11.90		7.1	21.0	
	8.8	13.90		5.6	13.30		8.0	23.5	
	10.0	15.50		6.3	14.80		8.8	25.7	
	11.0	16.80		7.1	16.50		10.0	28.9	
	12.5	18.70		8.0	18.50		11.0	31.5	
	14.2	20.60		8.8	20.10		12.5	35.3	
16.0	22.50	10.0		22.60	14.2		39.5		
17.5	24.00	11.0		24.60	16.0		43.8		
20.0	26.10	12.5		27.50	17.5		47.3		
76.1 (3.0)	3.2	5.75		14.2	30.60		20.0	52.8	
	3.6	6.44		16.0	33.80		22.2	57.4	
	4.0	7.11	17.5	36.30	25.0	62.9			
	4.5	7.95	20.0	40.20	28.0	68.4			
	5.0	8.77	22.2	43.50	30.0	71.8			
	5.6	9.74	25.0	47.20	32.0	75.0			
	6.3	10.80	28.0	50.80	36.0	80.0			
	7.1	12.10	30.0	53.00	40.0	85.8			
	8.0	13.40	32.0	54.90	133.0 (5 1/4)	4.5	14.3		
	8.8	14.60	114.3 (4 1/2)	4.0		10.3	5.0	15.8	
	10.0	16.30		4.5		11.5	5.6	17.6	
	11.0	17.70		5.0		12.7	6.3	19.7	
	12.5	19.60		5.6		14.1	7.1	22.0	
	14.2	21.70		6.3		15.8	8.0	24.7	
16.0	23.70	7.1		17.7		8.8	27.0		
17.5	25.30	8.0		19.7		10.0	30.3		
20.0	27.70	8.8		21.5		11.0	33.1		
82.5 (3 1/4)	3.6	7.00		10.0		24.2	12.5	37.1	
	4.0	7.74		11.0		26.3	14.2	41.6	
	4.5	8.66		12.5		29.4	16.0	46.2	
	5.0	9.56		14.2		32.8	17.5	49.8	
	5.6	10.60		16.0		36.3	20.0	55.7	
	6.3	11.80		17.5	39.1	22.2	60.7		
	7.1	13.20	20.0	43.4	25.0	66.6			
	8.0	14.70	22.2	47.0	28.0	72.5			
	8.8	16.00	25.0	51.2	30.0	76.2			
	10.0	17.90	28.0	55.2	32.0	79.7			
	11.0	19.40	30.0	57.5	36.0	86.1			
	12.5	21.60	32.0	60.0	40.0	91.7			
	14.2	23.90	36.0	63.9	114.3 (4 1/2)	4.0	10.9		
	16.0	26.20	4.0	10.9		4.5	12.2		
17.5	28.10	4.5	12.2	5.0		13.5			
20.0	30.80	5.0	13.5	5.6		15.0			
22.2	33.00	5.6	15.0	6.3		16.8			
25.0	35.50	6.3	16.8	7.1		18.8			
		7.1	18.8	8.0		21.0			
		8.0	21.0						



**METRIC
(IMPERIAL)**

OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m		
216.0 (8 1/2)	7.1	36.6	241.0 (9 1/2)	30.0	156.0	267 (10 1/2)	70.0	340.0		
	8.0	41.0		32.0	165.0		75.0	355.0		
	8.8	45.0		36.0	182.0		80.0	369.0		
	10.0	50.8		40.0	198.0		273 (10 3/4)	7.1	46.6	
	11.0	55.6		45.0	218.0			8.0	52.3	
	12.5	62.7		50.0	236.0			8.8	57.3	
	14.2	70.7		55.0	252.0			9.5	61.7	
	16.0	78.9		60.0	268.0			10.0	64.9	
	17.5	85.7		244.5 (9 5/8)	7.1			41.6	11.0	71.9
	20.0	96.7			8.0			46.7	12.5	80.3
	22.2	106.0			8.8		51.2	14.2	90.6	
	25.0	118.0			9.5		55.1	16.0	101.0	
	28.0	130.0			10.0		57.8	17.5	110.0	
	30.0	138.0			11.0		63.3	19.0	119.0	
	32.0	145.0			12.5		71.5	20.0	125.0	
	36.0	160.0		14.2	80.6		22.2	137.0		
	40.0	174.0		16.0	90.2		25.0	153.0		
45.0	190.0	17.5	98.0	28.0	169.0					
219.1 (8 5/8)	7.1	37.1	19.0	106.0	30.0	180.0				
	8.0	41.6	20.0	111.0	31.8	189.0				
	8.8	45.6	22.0	122.0	32.0	190.0				
	9.5	49.1	25.0	135.0	34.9	205.0				
	10.0	51.6	28.0	149.0	36.0	210.0				
	11.0	56.5	30.0	159.0	40.0	230.0				
	12.5	63.7	32.0	168.0	41.3	236.0				
	14.2	71.8	36.0	185.0	45.0	253.0				
	16.0	80.1	38.1	194.0	50.0	275.0				
	17.5	87.0	40.0	202.0	55.0	296.0				
	19.0	93.8	45.0	221.0	60.0	315.0				
	20.0	98.2	50.0	240.0	65.0	333.0				
	22.0	108.0	55.0	257.0	68.3	345.0				
	25.0	120.0	60.0	273.0	70.0	350.0				
	28.0	132.0	61.1	276.0	75.0	366.0				
	30.0	140.0	65.0	288.0	80.0	381.0				
	31.8	147.0	70.0	301.0	85.0	394.0				
32.0	148.0	254.0 (10.0)	7.1	43.2	279.4 (11.0)	8.0	53.5			
35.1	159.0		8.0	48.5		8.8	58.6			
36.0	163.0		8.8	53.2		10.0	66.0			
40.0	177.0		8.5	57.3		11.0	72.7			
44.4	191.0		10.0	60.2		12.5	82.2			
45.0	193.0		11.0	65.9		14.2	92.7			
50.0	209.0		12.5	74.4		16.0	104.0			
54.8	222.0		14.2	84.0		17.5	113.0			
55.0	223.0		16.0	93.9		20.0	128.0			
228.6 (9.0)	7.1		38.9	17.5		102.0	22.2	141.0		
	8.0		43.6	19.0		110.0	25.0	157.0		
	8.8		47.8	20.0		115.0	28.0	173.0		
	9.5		51.3	22.2		127.0	30.0	184.0		
	10.0		54.0	25.0		141.0	32.0	195.0		
	11.0		59.1	28.0		156.0	36.0	216.0		
	12.5		66.7	30.0		166.0	38.1	227.0		
	14.2		75.1	32.0		175.0	40.0	236.0		
	16.0	84.1	36.0	194.0	45.0	260.0				
	17.5	91.3	38.1	203.0	50.0	282.0				
	19.0	98.2	40.0	211.0	55.0	304.0				
	20.0	103.0	45.0	233.0	57.2	322.0				
	22.2	113.0	50.0	252.0	60.0	324.0				
	25.0	126.0	55.0	270.0	65.2	343.0				
	28.0	139.0	60.0	287.0	69.9	361.0				
	30.0	147.0	63.5	298.0	70.0	361.0				
	31.8	154.0	65.0	303.0	75.0	377.0				
32.0	155.0	70.0	318.0	80.0	393.0					
34.9	167.0	267 (10 1/2)	7.1	45.5	285.8 (11 1/4)	85.0	407.0			
36.0	171.0		8.0	51.1		12.5	84.2			
38.1	197.0		8.8	56.0		19.0	125.0			
40.0	186.0		10.0	63.4		25.0	161.0			
45.0	204.0		11.0	69.4		38.1	239.0			
50.0	221.0		12.5	78.5		50.0	298.0			
55.0	236.0		14.2	88.5		57.2	322.0			
57.2	242.0		16.0	99.0		71.5	380.0			
60.0	250.0		17.5	108.0		292.0 (11 1/2)	8.0	56.0		
241.0 (9 1/2)	7.1		41.0	20.0			122.0	8.8	61.5	
	8.0		46.0	22.0			134.0	10.0	69.5	
	8.8		50.4	25.0			149.0	11.0	76.2	
	10.0		57.0	28.0			165.0	12.5	86.2	
	12.5		70.4	30.0			175.0	14.2	97.3	
	14.2		79.4	32.0			185.0	16.0	109.0	
	16.0		88.8	36.0			205.0	17.5	118.0	
	17.5		96.5	40.0			224.0	19.0	128.0	
	20.0	109.0	45.0	246.0	20.0		134.0			
	22.2	120.0	50.0	268.0	22.2		148.0			
	25.0	133.0	55.0	288.0	25.0		165.0			
	28.0	147.0	60.0	306.0	28.0		182.0			
			65.0	324.0	30.0		194.0			



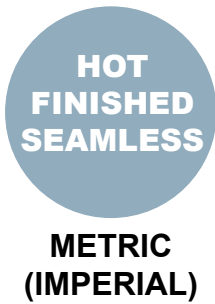
**METRIC
(IMPERIAL)**

OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	
292.0 (11 1/2)	32.0	205.0	318 (12 1/2)	10.0	76.0	330.2 (13.0)	85.0	514.0	
	36.0	227.0		11.0	83.3		90.0	533.0	
	38.1	239.0		12.5	94.2		339.7 (13 3/8)	12.5	101.0
	40.0	249.0		14.2	106.0			25.0	194.0
	45.0	274.0		16.0	119.0			38.1	283.0
	50.0	298.0		17.5	130.0			50.0	357.0
	55.0	321.0		20.0	147.0			63.5	432.0
	60.0	343.0		22.2	162.0		76.2	495.0	
	63.5	358.0		25.0	181.0		343.0 (13 1/2)	8.8	72.5
	65.0	364.0		28.0	200.0			10.0	82.1
	70.0	383.0		30.0	213.0			11.0	90.1
	73.0	394.0		32.0	226.0			12.5	102.0
	75.0	401.0		36.0	250.0			14.2	115.0
	80.0	418.0		38.1	262.0			16.0	129.0
	85.0	434.0		40.0	274.0			17.5	140.0
298.5 (11 3/4)	8.0	57.3	45.0	303.0	19.0	152.0			
	8.8	62.9	50.0	330.0	20.0	159.0			
	10.0	71.1	55.0	357.0	22.2	176.0			
	11.0	78.0	60.0	382.0	25.0	196.0			
	12.5	88.2	63.5	398.0	28.0	218.0			
	14.2	99.6	65.0	406.0	30.0	232.0			
	16.0	111.0	70.0	428.0	32.0	245.0			
	17.5	121.0	75.0	449.0	36.0	273.0			
	20.0	137.0	80.0	470.0	40.0	299.0			
	22.2	151.0	85.0	488.0	45.0	331.0			
	25.0	169.0	90.0	506.0	50.0	361.0			
	28.0	187.0	323.9 (12 3/4)	8.0	62.3	55.0	391.0		
	30.0	199.0		8.8	68.4	60.0	419.0		
	32.0	210.0		10.0	77.4	65.0	446.0		
	36.0	233.0		11.0	84.9	70.0	471.0		
38.1	245.0	12.5		96.0	75.0	496.0			
40.0	255.0	14.2		108.0	80.0	519.0			
45.0	281.0	16.0		121.0	85.0	541.0			
50.0	306.0	17.5		132.0	90.0	562.0			
55.0	330.0	19.0		143.0	355.6 (14.0)	8.8	75.3		
60.0	353.0	20.0		150.0		10.0	85.2		
63.5	368.0	22.2		165.0		11.0	93.5		
65.0	374.0	25.0		184.0		12.5	106.0		
70.0	394.0	28.0		204.0		14.2	120.0		
74.6	412.0	28.6		208.0		16.0	134.0		
75.0	413.0	30.0		217.0		17.5	146.0		
80.0	431.0	31.8	229.0	19.0		158.0			
85.0	448.0	32.0	230.0	20.0		166.0			
90.0	463.0	34.9	249.0	22.2		183.0			
304.8 (12.0)	8.0	58.6	36.0	256.0		25.0	204.0		
	8.8	64.3	40.0	280.0		28.0	226.0		
	10.0	72.8	41.3	288.0		28.6	231.0		
	11.0	79.8	45.0	310.0		30.0	241.0		
	12.0	90.2	47.6	324.0		31.8	254.0		
	14.2	102.0	50.0	338.0	32.0	255.0			
	16.0	114.0	55.0	365.0	36.0	284.0			
	17.5	124.0	60.0	390.0	38.1	298.0			
	19.0	134.0	63.5	408.0	40.0	311.0			
	20.0	141.0	65.0	415.0	44.4	341.0			
	22.2	155.0	70.0	439.0	45.0	345.0			
	25.0	173.0	75.0	460.0	50.0	377.0			
	28.0	191.0	80.0	481.0	55.0	408.0			
	30.0	204.0	85.0	501.0	60.0	437.0			
	32.0	215.0	90.0	519.0	63.5	457.0			
36.0	239.0	330.2 (13.0)	12.5	97.9	65.0	466.0			
38.1	251.0		14.2	111.0	70.0	493.0			
40.0	261.0		16.0	124.0	75.0	519.0			
45.0	289.0		17.5	135.0	76.2	544.0			
50.0	314.0		20.0	153.0	80.0	548.0			
55.0	339.0		22.2	169.0	85.0	567.0			
60.0	363.0		25.0	188.0	90.0	590.0			
63.5	378.0		28.0	209.0	100.0	630.0			
65.0	385.0		30.0	222.0	368.0 (14 1/2)	8.8	78.0		
70.0	406.0		32.0	235.0		10.0	88.3		
75.0	425.0		34.0	248.0		11.0	96.8		
76.2	430.0		36.0	261.0		12.5	110.0		
80.0	444.0		38.1	274.0		14.2	124.0		
85.0	461.0		40.0	286.0		16.0	139.0		
90.0	477.0		45.0	316.0		17.5	151.0		
311.2 (12 1/4)	12.5	92.1	50.0	345.0		20.0	172.0		
	25.0	176.0	55.0	373.0		22.2	189.0		
	38.1	257.0	60.0	399.0		25.0	211.0		
	50.0	322.0	60.3	401.0	28.0	235.0			
	57.2	358.0	65.0	425.0	30.0	250.0			
	63.5	388.0	70.0	449.0	32.2	265.0			
318 (12 1/2)	8.0	61.2	75.0	472.0	36.0	295.0			
	8.8	67.1	76.2	477.0	38.1	310.0			
			80.0	493.0	40.0	324.0			
					45.0	358.0			



**METRIC
(IMPERIAL)**

OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	
368.0 (14 1/2)	50.0	392.0	419 (16 1/2)	20.0	197.0	457.0 (18.0)	76.2	716.0	
	55.0	425.0		22.2	217.0		80.0	744.0	
	60.0	456.0		25.0	243.0		85.0	780.0	
	63.5	477.0		28.0	270.0		90.0	815.0	
	65.5	486.0		30.0	288.0		100.0	880.0	
	70.0	514.0		31.8	304.0		470.0 (18 1/2)	11.0	125.0
	75.0	542.0		32.0	305.0			12.5	141.0
	76.2	548.0		36.0	340.0			14.2	160.0
	80.0	568.0		40.0	374.0			16.0	179.0
	85.0	593.0		44.4	410.0			17.5	195.0
90.0	617.0	45.0	415.0	19.0	212.0				
100.0	661.0	50.0	455.0	20.0	222.0				
381.0 (15.0)	12.5	114.0	55.0	494.0	22.2	245.0			
	19.0	170.0	57.2	510.0	25.0	274.0			
	25.0	220.0	60.0	531.0	28.0	305.0			
	38.1	322.0	63.5	557.0	30.0	326.0			
	50.0	408.0	65.0	567.0	32.0	346.0			
	63.5	497.0	70.0	602.0	36.0	385.0			
	76.2	573.0	75.0	636.0	38.1	406.0			
	394.0 (15 1/2)	10.0	94.7	80.0	669.0	40.0	424.0		
11.0		104.0	85.0	700.0	45.0	472.0			
12.5		118.0	90.0	730.0	50.0	518.0			
14.2		133.0	100.0	787.0	50.8	525.0			
16.0		149.0	431.8 (17.0)	12.5	129.0	55.0	563.0		
17.5		162.0		19.0	193.0	60.0	607.0		
20.0		184.0		25.0	251.0	63.5	636.0		
22.2		204.0		38.1	370.0	65.0	649.0		
25.0		228.0		44.1	424.0	70.0	691.0		
28.0		253.0		44.1	424.0	75.0	731.0		
30.0	269.0	50.0		471.0	76.2	740.0			
32.0	286.0	57.2		528.0	80.0	769.0			
36.0	318.0	63.5		577.0	85.0	807.0			
38.1	334.0	76.2		668.0	90.0	843.0			
40.0	349.0	445.0 (17 1/2)	11.0	118.0	100.0	912.0			
45.0	387.0		12.5	133.0	483.0 (19.0)	25.0	282.0		
50.0	424.0		14.2	151.0		495.0 (19 1/2)	12.5	149.0	
55.0	460.0		16.0	169.0			14.2	168.0	
60.0	494.0		17.5	184.0			16.0	189.0	
63.5	517.0		19.0	199.0			17.5	206.0	
65.0	527.0		20.0	210.0			19.0	224.0	
70.0	559.0		22.2	231.0			20.0	234.0	
75.0	590.0		25.0	259.0			22.2	259.0	
76.2	597.0		28.0	288.0			25.0	290.0	
80.0	619.0	30.0	307.0	25.4			294.0		
85.0	648.0	32.0	326.0	28.0	322.0				
90.0	675.0	36.0	363.0	30.0	344.0				
100.0	725.0	40.0	400.0	32.0	365.0				
406.4 (16.0)	10.0	97.8	44.4	438.0	36.0	408.0			
	11.0	107.0	45.0	444.0	38.1	430.0			
	12.5	121.0	50.0	487.0	40.0	449.0			
	14.2	137.0	55.0	529.0	45.0	499.0			
	16.0	154.0	60.0	570.0	50.0	549.0			
	17.5	168.0	63.5	597.0	50.8	557.0			
	19.0	182.0	65.0	609.0	55.0	597.0			
	20.0	191.0	70.0	647.0	60.0	644.0			
	22.2	210.0	75.0	684.0	63.5	676.0			
	25.0	235.0	76.2	692.0	65.0	689.0			
28.0	261.0	80.0	720.0	70.0	734.0				
30.0	278.0	85.0	755.0	75.0	777.0				
31.8	346.0	90.0	788.0	76.2	788.0				
32.0	295.0	100.0	851.0	80.0	819.0				
36.0	329.0	457.0 (18.0)	11.0	121.0	85.0	859.0			
38.1	346.0		12.5	137.0	90.0	899.0			
40.0	361.0		14.2	155.0	100.0	974.0			
45.0	401.0		16.0	174.0	508.0 (20.0)	12.5	153.0		
50.0	439.0		17.5	190.0		14.2	173.0		
55.0	477.0		19.0	205.0		16.0	194.0		
57.2	493.0		20.0	216.0		17.5	212.0		
60.0	513.0		22.2	238.0		19.0	230.0		
65.0	547.0		25.0	266.0		20.0	241.0		
70.0	581.0		28.0	296.0		22.2	266.0		
75.0	613.0	30.0	316.0	25.0		298.0			
76.2	620.0	32.0	335.0	25.4		302.0			
80.0	644.0	36.0	374.0	28.0		331.0			
85.0	674.0	38.1	394.0	30.0	354.0				
90.0	702.0	40.0	411.0	32.0	376.0				
100.0	756.0	45.0	457.0	36.0	419.0				
419 (16 1/2)	11.0	111.0	50.0	502.0	38.1	441.0			
	12.5	125.0	55.0	545.0	40.0	462.0			
	14.2	142.0	60.0	587.0	45.0	514.0			
	16.0	159.0	65.0	628.0	50.0	565.0			
	17.5	173.0	70.0	668.0					
	19.0	187.0	75.0	707.0					



OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m	OD mm (ins)	WALL mm	WEIGHT Kg/m		
508.0 (20.0)	50.8	573.0	559.0 (22.0)	55.0	684.0	622.0 (24 1/2)	65.0	893.0		
	55.0	614.0		60.0	738.0		70.0	953.0		
	60.0	663.0		65.0	792.0		75.0	1012.0		
	63.5	696.0		70.0	844.0		80.0	1069.0		
	65.0	710.0		75.0	895.0		85.0	1126.0		
	70.0	756.0		80.0	945.0		90.0	1181.0		
	75.0	801.0		85.0	994.0		100.0	1287.0		
	76.2	811.0		90.0	1041.0					
	80.0	844.0		100.0	1132.0					
	85.0	887.0					660.0 (26.0)	16.0	254.0	
	90.0	928.0		572.0 (22 1/2)	14.2			195.0	17.5	277.0
	100.0	1006.0			16.0			219.0	20.0	316.0
					17.5			239.0	22.2	349.0
	521.0 (20 1/2)	12.5			157.0			20.0	272.0	25.0
14.2		177.0	22.2		301.0	28.0		436.0		
16.0		199.0	25.0		337.0	30.0		466.0		
17.5		217.0	28.0		376.0	32.0		496.0		
20.0		247.0	30.0		401.0	36.0		554.0		
22.2		273.0	32.0		426.0	40.0		612.0		
25.0		306.0	36.0		476.0	45.0		683.0		
28.0		340.0	40.0		525.0	50.0		752.0		
30.0		363.0	45.0		585.0	55.0		821.0		
32.0		386.0	50.0		644.0	60.0		888.0		
36.0		431.0	55.0		701.0	65.0	954.0			
40.0		474.0	60.0	758.0	70.0	1019.0				
45.0		528.0	65.0	813.0	75.0	1082.0				
50.0		581.0	70.0	867.0	80.0	1144.0				
55.0	632.0	75.0	919.0	85.0	1205.0					
60.0	682.0	80.0	971.0	90.0	1265.0					
65.0	731.0	85.0	1021.0	100.0	1381.0					
70.0	779.0	90.0	1070.0							
75.0	825.0	100.0	1164.0							
80.0	870.0			610.0 (24.0)	14.2	209.0				
85.0	914.0	546.0 (21 1/2)	16.0		234.0	16.0	234.0			
90.0	957.0		17.5		256.0	17.5	256.0			
100.0	1038.0		20.0		291.0	20.0	291.0			
			22.2		322.0	22.2	322.0			
			25.0		361.0	25.0	361.0			
			28.0		402.0	28.0	402.0			
			30.0		429.0	30.0	429.0			
			32.0		456.0	32.0	456.0			
			36.0		510.0	36.0	510.0			
			40.0		562.0	40.0	562.0			
			45.0		627.0	45.0	627.0			
			50.0		691.0	50.0	691.0			
			55.0		753.0	55.0	753.0			
			60.0	814.0	60.0	814.0				
		65.0	874.0	65.0	874.0					
		70.0	932.0	70.0	932.0					
		75.0	990.0	75.0	990.0					
		80.0	1046.0	80.0	1046.0					
		85.0	1101.0	85.0	1101.0					
		90.0	1154.0	90.0	1154.0					
		100.0	1258.0	100.0	1258.0					
				622.0 (24 1/2)	14.2	213.0				
559.0 (22.0)	17.5	234.0	559.0 (22.0)		16.0	239.0	14.2	213.0		
	20.0	266.0			17.5	261.0	16.0	239.0		
	22.2	294.0			20.0	297.0	17.5	261.0		
	25.0	329.0			22.2	328.0	20.0	297.0		
	28.0	367.0			25.0	368.0	22.2	328.0		
	30.0	391.0			28.0	410.0	25.0	368.0		
	32.0	416.0			30.0	438.0	28.0	410.0		
	36.0	464.0			32.0	466.0	30.0	438.0		
	40.0	512.0			36.0	520.0	32.0	466.0		
	45.0	570.0			40.0	574.0	36.0	520.0		
	50.0	628.0			45.0	640.0	40.0	574.0		
					50.0	705.0	45.0	640.0		
					55.0	769.0	50.0	705.0		
				60.0	832.0	55.0	769.0			

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