

## Product Specification

Material of Grade	Chemical Composition (%)					Mechanical Properties			Color Code
	C Max	Si Max	Mn Max	P Max	S Max	Yield Strength	Tensile Strength	Elongation	
						N/mm <sup>2</sup>	N/mm <sup>2</sup>	%	
Grade A	0.300	-	1.400	0.045	0.045	270	310	25	-
Grade B	0.300	-	1.400	0.045	0.045	315	400	23	-
Grade C	0.270	-	1.400	0.045	0.045	345	425	21	-
Grade D	0.300	-	1.400	0.045	0.045	250	400	23	-

Nominal Size		Thickness	Weight	Cross Sectional Area	Geometrical Moment of Inertia	Modulus of Section	Radius of Gyration
In	mm				I <sub>x</sub> I <sub>y</sub>	Z <sub>x</sub> Z <sub>y</sub>	i <sub>x</sub> i <sub>y</sub>
In	mm	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
1" x 1"	25.4 x 25.4	2.41	1.62	2.067	1.75	1.38	0.920
		3.38	2.10	2.683	2.04	1.60	0.871
2" x 2"	50.8 x 50.8	2.79	4.00	5.157	19.4	7.64	1.94
		3.18	4.52	5.797	21.4	8.42	1.92
		3.91	5.44	6.940	24.7	9.71	1.89
		4.78	6.41	8.211	27.9	11.0	1.84
2-1/2" x 2-1/2"	63.5 x 63.5	3.58	6.43	8.250	48.3	15.2	2.42
		4.78	8.32	10.64	59.4	18.7	2.36
		6.35	10.56	13.13	66.8	21.1	2.26
3" x 3"	76.2 x 76.2	3.96	8.60	11.04	94.2	24.7	2.92
		4.78	10.21	13.07	108	28.5	2.88
		6.35	13.09	16.36	126	33.2	2.78
3-1/2" x 3-1/2"	88.9 x 88.9	3.96	10.24	13.05	154	34.7	3.44
		4.78	12.11	15.50	179	40.3	3.40
		6.35	15.62	19.58	213	48.0	3.30
		7.92	18.88	23.50	243	54.6	3.21
4" x 4"	101.6 x 101.6	4.78	13.85	17.92	275	54.2	3.92
		6.35	17.89	22.81	333	65.5	3.82
		7.92	21.61	27.52	384	75.6	3.74
		9.52	25.06	31.95	425	83.6	3.65
		12.70	31.07	38.24	437	86.1	3.38
5" x 5"	127.0 x 127.0	4.78	17.65	22.78	560	88.1	4.96
		6.35	22.94	29.26	691	109	4.86
		7.92	27.93	35.57	812	128	4.78
		9.52	32.65	41.62	916	144	4.69
		12.70	41.19	51.14	1010	159	4.45

### Dimension Tolerances

Outside Diameter ; 65.0 mm. : ± 0.5 mm.  
 65.0-90.0 mm. : ± 0.60 mm.  
 90.0-140.0 mm. : ± 0.80 mm.  
 > 140.0 mm. : ± 1%

Thickness ; ± 10%  
 Weight ; N/A



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Nominal Size		Thickness	Weight	Cross Sectional Area	Geometrical Moment of Inertia		Modulus of Section		Radius of Gyration	
In	mm				I <sub>x</sub>	I <sub>y</sub>	Z <sub>x</sub>	Z <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>
In	mm	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	cm
3" x 2"	76.2 x 50.8	3.58	6.43	8.250	63.0	33.4	16.5	13.2	2.76	2.01
		4.78	8.32	10.64	77.5	40.8	20.3	16.1	2.70	1.96
		6.35	10.56	13.13	86.8	45.7	22.8	18.0	2.57	1.87
4" x 2"	101.6 x 50.8	3.96	8.60	11.04	140	47.0	27.6	18.5	3.56	2.06
		4.78	10.21	13.07	161	53.7	31.8	21.1	3.51	2.03
		6.35	13.09	16.36	186	61.8	36.7	24.3	3.38	1.94
4" x 3"	101.6 x 76.2	3.96	10.24	13.05	188	120	37.0	31.6	3.80	3.04
		4.78	12.11	15.50	218	139	43.0	36.6	3.75	3.00
		6.35	15.62	19.58	260	166	51.1	43.5	3.64	2.91
		7.92	18.88	23.50	296	188	58.2	49.4	3.55	2.83
5" x 3"	127.0 x 76.2	4.78	13.85	17.92	378	171	59.6	44.8	4.59	3.08
		6.35	17.89	22.81	456	205	71.8	53.9	4.47	3.00
		7.92	21.61	27.52	526	235	82.8	61.7	4.37	2.92
		9.52	25.06	31.95	581	258	91.5	67.8	4.26	2.84
6" x 3"	152.4 x 76.2	4.78	15.74	20.35	596	202	78.2	52.9	5.41	3.15
		6.35	20.42	26.03	726	245	95.3	64.2	5.28	3.07
		7.92	24.78	31.55	845	282	111	74.1	5.18	2.99
		9.52	28.85	36.79	943	313	124	82.0	5.06	2.91
6" x 4"	152.4 x 101.6	4.78	17.65	22.78	728	389	95.6	76.6	5.65	4.13
		6.35	22.94	29.26	898	479	118	94.4	5.54	4.05
		7.92	27.93	35.57	1060	561	138	110	5.45	3.97
		9.52	32.65	44.74	1370	707	179	139	5.52	3.97
		12.70	41.19	58.06	1700	864	223	170	5.40	3.86

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Grade A	0.300	-	1.400	0.045	0.045	230	310	25	-
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Grade C	0.270	-	1.400	0.045	0.045	315	425	21	-
Grade D	0.300	-	1.400	0.045	0.045	250	400	23	-

Nominal Size		Outside Diameter	Thickness	Weight	Cross Sectional Area	Geometrical Moment of Inertia	Modulus of Section	Radius of Gyration
In	mm	mm	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
1/2"	15	21.3	2.77	1.27	1.613	0.708	0.664	0.662
			3.73	1.62	2.059	0.830	0.780	0.635
3/4"	20	26.7	2.87	1.69	2.149	1.55	1.16	0.849
			3.91	2.20	2.799	1.87	1.40	0.818
1"	25	33.4	2.64	2.00	2.551	3.04	1.82	1.09
			3.38	2.50	3.188	3.64	2.18	1.07
			4.55	3.24	4.124	4.40	2.63	1.03
1-1/4"	32	42.2	2.79	2.71	3.454	6.74	3.19	1.40
			3.56	3.39	4.322	8.13	3.85	1.37
			4.85	4.47	5.691	10.1	4.78	1.33
1-1/2"	40	48.3	2.90	3.25	4.136	10.7	4.43	1.61
			3.68	4.05	5.159	12.9	5.35	1.58
			5.08	5.41	6.898	16.3	6.76	1.54
2"	50	60.3	3.07	4.33	5.520	22.7	7.52	2.03
			3.91	5.44	6.927	27.7	9.18	2.00
			5.54	7.48	9.531	36.1	12.0	1.95
2-1/2"	65	73.0	3.96	6.74	8.589	51.3	14.1	2.44
			4.78	8.04	10.24	59.9	16.4	2.42
			5.16	8.63	11.00	63.6	17.4	2.41
			7.01	11.41	14.53	80.0	21.9	2.35
3"	80	88.9	3.96	8.29	10.57	95.5	21.5	3.01
			4.78	9.92	12.63	112	25.2	2.98
			5.49	11.29	14.39	126	28.3	2.96
			7.62	15.27	19.46	162	36.5	2.89
3-1/2"	90	101.6	3.96	9.53	12.15	145	28.5	3.45
			4.78	11.41	14.54	171	33.6	3.43
			5.74	13.57	17.29	199	39.2	3.40
			8.08	18.63	23.74	261	51.5	3.32

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Nominal Size		Outside Diameter	Thickness	Weight	Cross Sectional Area	Geometrical Moment of Inertia	Modulus of Section	Radius of Gyration
In	mm	mm	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
4"	100	114.3	3.96	10.78	13.73	209	36.6	3.90
			4.78	12.91	16.45	247	43.2	3.88
			5.56	14.91	18.99	281	49.3	3.85
			6.02	16.07	20.48	301	52.7	3.83
			8.56	22.32	28.44	400	70.0	3.75
5"	125	141.3	6.55	21.77	27.73	631	89.3	4.77
			9.53	30.97	39.45	861	122	4.67
			19.05	57.43	73.16	1400	198	4.37
6"	150	168.3	7.11	28.26	36.00	1170	139	5.70
			10.97	42.56	54.22	1690	200	5.58
			21.95	79.22	100.9	2760	328	5.23

### Dimension Tolerances

Outside Diameter ; ≤ 48.0 mm. : ± 0.5%  
; ≥ 50.0 mm. : ± 0.75%

Thickness ; ± 10%

Weight ; N/A

