

Dimensions and Properties of Square Sections (SHS) as per IS:4923:1997/EN 10219-1:2006/ASTM A500

Width (mm)	Depth (mm)	Thickness (mm)	Area (cm ²)	Weight (Kg/Mtr)	moment of inertia (cm ⁴)	Radius of Gyration (cm)	Elastic module (cm ²)	Plastic module (cm ³)
25	25	1.60	1.43	1.12	1.28	0.94	1.02	1.24
25	25	2.00	1.74	1.36	1.48	0.92	1.19	1.47
25	25	2.60	2.16	1.69	1.72	0.89	1.38	1.76
25	25	3.20	2.53	1.98	1.89	0.86	1.51	1.98
32	32	2.00	2.30	1.80	3.36	1.21	2.10	2.54
32	32	2.60	2.88	2.26	4.02	1.18	2.51	3.11
32	32	3.20	3.42	2.69	4.54	1.15	2.83	3.59
32	32	4.00	4.07	3.19	5.02	1.11	3.14	4.11
38	38	2.00	2.78	2.18	5.88	1.46	3.10	3.70
38	38	2.60	3.51	2.75	7.13	1.43	3.76	4.57
38	38	3.20	4.19	3.29	8.18	1.40	4.30	5.34
38	38	4.00	5.03	3.95	9.26	1.36	4.87	6.22
40	40	2.60	3.72	2.92	8.45	1.51	4.22	5.12
40	40	2.90	4.09	3.21	9.11	1.49	4.56	5.58
40	40	3.20	4.45	3.49	9.72	1.48	4.86	6.00
40	40	4.00	5.35	4.20	11.07	1.44	5.54	7.01
49.5	49.5	2.60	4.70	3.69	16.91	1.90	6.83	8.16
49.5	49.5	2.90	5.19	4.07	18.37	1.88	7.42	8.93
49.5	49.5	3.20	5.66	4.44	19.74	1.87	7.97	9.67
49.5	49.5	4.00	6.87	5.39	22.94	1.83	9.27	11.46
60	60	2.60	5.80	4.55	31.33	2.33	10.44	12.34
60	60	2.90	6.41	5.03	34.21	2.31	11.40	13.56
60	60	3.20	7.01	5.50	36.94	2.30	12.31	14.73
60	60	4.00	8.55	6.71	43.55	2.26	14.52	17.64
60	60	4.50	9.47	7.43	47.20	2.23	15.73	19.31
72	72	3.20	8.54	6.71	66.32	2.79	18.42	21.80
72	72	4.00	10.47	8.22	79.02	2.75	21.95	26.32
72	72	4.80	12.31	9.66	90.30	2.71	25.08	30.48
80	80	3.20	9.57	7.51	92.71	3.11	23.18	27.29
80	80	4.00	11.75	9.22	111.04	3.07	27.76	33.07
80	80	4.90	14.10	11.07	129.51	3.03	32.38	39.09
91.5	91.5	3.60	12.32	9.67	156.48	3.56	34.20	40.24
91.5	91.5	4.50	15.14	11.88	187.56	3.52	41.00	48.79
91.5	91.5	5.40	17.85	14.01	215.66	3.48	47.14	56.76
100	100	4.00	14.95	11.73	226.34	3.89	45.27	53.30
100	100	5.00	18.36	14.41	271.08	3.84	54.22	64.59
100	100	6.00	21.63	16.98	311.45	3.79	62.29	75.09
113.5	113.5	4.50	19.10	14.99	372.86	4.42	65.70	77.32
113.5	113.5	4.80	20.28	15.92	393.28	4.40	69.30	81.81
113.5	113.5	5.40	22.60	17.74	432.55	4.38	76.22	90.54
113.5	113.5	6.00	24.87	19.52	469.78	4.35	82.78	98.95
132	132	4.80	23.83	18.70	634.36	5.16	96.11	112.68
132	132	5.40	26.59	20.88	700.07	5.13	106.07	125.01
132	132	6.00	29.31	23.01	762.93	5.10	115.60	136.97
150	150	4.00	22.95	18.01	807.78	5.93	107.70	124.86
150	150	5.00	28.36	22.26	982.07	5.89	130.94	152.97
150	150	6.00	33.63	26.40	1145.84	5.84	152.78	179.87
150	150	7.00	38.78	30.44	1299.36	5.79	173.25	205.57
150	150	8.00	43.79	34.37	1442.89	5.74	192.39	230.09
220	220	4.00	34.15	26.81	2639.06	8.79	239.91	275.46
220	220	5.00	42.36	33.25	3237.90	8.74	294.35	339.72
220	220	6.00	50.43	39.59	3813.19	8.70	346.65	402.16
220	220	7.00	58.38	45.83	4365.33	8.65	396.85	462.81

Dimensions and Properties of Rectangular Sections (RHS) as per IS:4923:1997/EN 10219-1:2006/ASTM A500

Width (mm)	Depth (mm)	Thickness (mm)	Area (cm ²)	Weight (Kg/Mtr)	Moment of inertia (cm ⁴)		Radius of Gyration (cm)		Elastic module (cm ³)		Plastic module (cm ³)	
					I _x	I _y	R _x	R _y	Z _x	Z _y	S _x	S _y
50	25	2.00	2.74	2.15	8.38	2.81	1.75	1.01	3.35	2.25	4.26	2.62
50	25	2.60	3.46	2.71	10.16	3.36	1.71	0.99	4.06	2.69	5.26	3.21
50	25	3.20	4.13	3.24	11.63	3.80	1.68	0.96	4.65	3.04	6.14	3.73
50	25	4.00	4.95	3.88	13.13	4.23	1.63	0.92	5.25	3.38	7.13	4.29
60	40	2.60	4.76	3.73	22.76	12.09	2.19	1.59	7.59	6.05	9.36	7.07
60	40	2.90	5.25	4.12	24.74	13.11	2.17	1.58	8.25	6.56	10.25	7.73
60	40	3.60	6.35	4.98	28.90	15.23	2.13	1.55	9.63	7.62	12.16	9.15
60	40	4.50	7.67	6.02	33.30	17.43	2.08	1.51	11.10	8.72	14.32	10.75
66	33	2.60	4.70	3.69	25.15	8.43	2.31	1.34	7.62	5.11	9.68	5.94
66	33	2.90	5.19	4.07	27.33	9.12	2.29	1.33	8.28	5.53	10.59	6.49
66	33	3.60	6.28	4.93	31.87	10.52	2.25	1.29	9.66	6.37	12.56	7.66
66	33	4.50	7.58	5.95	36.64	11.93	2.20	1.25	11.10	7.23	14.77	8.94
80	40	2.60	5.80	4.55	46.58	15.73	2.84	1.65	11.64	7.87	14.63	9.01
80	40	2.90	6.41	5.03	50.87	17.11	2.82	1.63	12.72	8.56	16.07	9.88
80	40	3.20	7.01	5.50	54.94	18.41	2.80	1.62	13.74	9.21	17.46	10.72
80	40	4.00	8.55	6.71	64.79	21.49	2.75	1.59	16.20	10.74	20.91	12.77
96	48	3.20	8.54	6.71	98.61	33.28	3.40	1.97	20.54	13.87	25.85	15.91
96	48	4.00	10.47	8.22	117.54	39.32	3.35	1.94	24.49	16.30	31.21	19.14
96	48	4.80	12.31	9.66	134.35	44.55	3.30	1.90	27.99	18.56	36.13	22.08
100	50	3.20	8.93	7.01	112.29	37.95	3.55	2.06	22.46	15.18	28.20	17.37
100	50	3.60	9.95	7.81	123.50	41.56	3.52	2.04	24.70	16.63	31.20	19.19
100	50	4.50	12.17	9.55	146.59	48.87	3.47	2.00	29.32	19.55	37.55	23.00
100	50	5.40	14.28	11.21	166.80	55.09	3.42	1.96	33.36	22.04	43.34	26.43
120	60	3.20	10.85	8.51	199.87	67.94	4.29	2.50	33.31	22.65	41.50	25.63
120	60	3.60	12.11	9.50	220.73	74.76	4.27	2.48	36.79	24.92	46.06	28.40
120	60	4.50	14.87	11.67	264.49	88.87	4.22	2.44	44.08	29.62	55.82	34.30
122	61	3.60	12.32	9.67	232.61	78.83	4.34	2.35	38.13	25.84	47.71	29.42
122	61	4.50	15.14	11.88	278.94	93.78	4.29	2.49	45.72	30.75	57.85	35.56
122	61	5.40	17.85	14.01	320.83	107.03	4.24	2.45	52.60	35.09	67.29	41.22
145	82	4.80	20.28	15.92	555.16	228.50	5.23	3.36	76.57	55.73	94.93	63.93
145	82	5.40	22.60	17.74	610.85	250.59	5.20	3.33	84.26	61.12	105.07	70.66
172	92	4.80	23.83	18.70	917.13	346.91	6.20	3.82	106.64	75.41	132.08	85.61
172	92	5.40	26.59	20.88	1012.47	381.74	6.17	3.79	117.73	82.99	146.55	94.86
200	100	4.00	22.95	18.01	1199.64	410.76	7.23	4.23	119.96	82.15	148.03	91.70
200	100	5.00	28.36	22.26	1459.16	496.92	7.17	4.19	145.92	99.38	181.36	112.09
200	100	6.00	33.63	26.40	1703.17	576.89	7.12	4.14	170.32	115.38	213.25	131.49

Tolerances for SHS & RHS as per IS:4923:1997

1. Outside dimensions of the sides : $\pm 1\%$ with a minimum of ± 0.5 mm
2. Thickness : $\pm 10\%$
3. Weight : Individual Length : $+10\% / -8\%$
On Lots of 10 Tonnes : ± 7.5
4. Squareness of corner : $90^\circ \pm 2^\circ$
5. Radii of corners- Outsides : $3t$ Max. Where t is the thickness of the section.

Mechanical Properties

Grade	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation % age	
			Upto 25.4 mm	Above 25.4 mm
YSt 210	330	210	12	20
YSt 240	410	240	10	15
YSt 310	450	310	8	10