

IS 18573- STRUCTURAL APPLICATION

Dimension and Properties of Rectangle Welded Carbon Steel Section

SI No	Size (Depth x Width)	THK	Mass per Unit Length	Area of Section	Moment of Inertia about		Radius of Gyration about		Elastic Modulus about		Plastic Modulus about	
		mm	kg/m	cm ²	X-X	Y-Y	X-X	Y-Y	X-X	Y-Y	X-X	Y-Y
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	40×20	1.2	1.06	1.35	2.7	0.92	1.42	0.83	1.36	0.92	1.71	1.05
2	40×20	1.4	1.22	1.55	3.1	1.04	1.41	0.82	1.55	1.04	1.95	1.2
3	40×20	1.6	1.37	1.75	3.4	1.15	1.4	0.81	1.72	1.15	2.18	1.34
4	40×20	1.8	1.53	1.95	3.8	1.25	1.39	0.8	1.88	1.25	2.4	1.47
5	40×20	1.9	1.6	2.04	3.9	1.3	1.38	0.8	1.95	1.3	2.51	1.54
6	50×25	1.2	1.34	1.71	5.5	1.88	1.8	1.05	2.2	1.5	2.73	1.69
7	50×25	1.4	1.55	1.97	6.3	2.13	1.78	1.04	2.51	1.71	3.14	1.94
8	50×25	1.6	1.75	2.23	7.02	2.37	1.77	1.03	2.81	1.9	353	2.17
9	50×25	1.8	1.95	2.49	7.72	2.6	1.76	1.02	3.09	2.08	3.9	2.4
10	50×25	1.9	2.05	2.61	8.06	2.71	1.76	1.02	3.22	2.16	4.08	2.51
11	60×40	1.2	1.81	2.31	11.8	6.34	2.26	1.66	3.93	3.17	4.7	3.57
12	60×40	1.4	2.1	2.67	13.5	7.26	2.25	1.65	4.51	3.63	5.42	4.11
13	60×40	1.6	2.38	3.03	15.2	8.15	2.24	1.64	5.07	4.08	6.12	4.64
14	60×40	1.8	2.66	3.39	16.85	9.01	2.23	1.63	5.62	4.5	6.81	5.15
15	60×40	1.9	2.8	3.56	17.64	9.42	2.22	1.63	5.88	4.71	7.14	5.41
16	80×40	1.2	2.19	2.79	23.7	8.15	2.91	1.71	5.92	4.07	7.25	4.5
17	80×40	1.4	2.54	3.23	27.2	9.35	2.9	1.7	6.81	4.68	8.37	5.19
18	80×40	1.6	2.88	3.67	30.71	10.52	2.89	1.69	7.68	5.26	9.47	5.87
19	80×40	1.8	3.22	4.11	34.08	11.64	2.88	1.68	8.52	5.82	10.55	6.53
20	80×40	1.9	3.39	4.32	35.73	12.18	2.88	1.68	8.93	6.09	11.08	6.85
21	96×48	1.2	2.64	3.36	41.4	14.31	3.51	2.06	8.63	5.96	10.54	6.55
22	96×48	1.4	3.06	3.9	47.8	16.47	3.5	2.05	9.96	6.86	12.2	7.57
23	96×48	1.6	3.49	4.44	54.03	18.57	3.49	2.05	11.26	7.74	13.82	8.58
24	96×48	1.8	3.9	4.97	60.11	20.61	3.48	2.04	12.52	8.59	15.42	9.56
25	96×48	1.9	4.11	5.23	63.09	21.61	3.47	2.03	13.14	9	16.21	10.04
26	100×40	1.2	2.56	3.27	41.1	9.95	3.55	1.75	8.22	4.98	10.27	5.43
27	100×40	1.4	2.98	3.79	47.4	11.44	3.54	1.74	9.48	5.72	11.88	6.27
28	100×40	1.6	3.38	4.31	53.5	12.88	3.52	1.73	10.71	6.44	13.47	7.1
29	100×40	1.8	3.79	4.83	59.5	14.27	3.51	1.72	11.91	7.13	15.02	7.9
30	100×40	1.9	3.99	5.08	62.5	14.95	3.51	1.71	12.49	7.47	15.79	8.3

Dimension and Properties of Square Welded Carbon Steel Section

SI No	Size (Depth x Width)	THK	Mass per Unit Length	Area of Section	Moment of Inertia about	Radius of Gyration about	Elastic Modulus about	Plastic Modulus about
		mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	25×25	0.9	0.66	0.85	0.81	0.98	0.65	0.76
2	25×25	1.2	0.87	1.11	1.03	0.96	0.82	0.97
3	25×25	1.4	1	1.27	1.16	0.95	0.92	1.11
4	25×25	1.6	1.12	1.43	1.28	0.94	1.02	1.24
5	25×25	1.8	1.25	1.59	1.38	0.93	1.11	1.35
6	25×25	1.9	1.31	1.66	1.43	0.93	1.15	1.41
7	30×30	1.2	1.06	1.35	1.83	1.17	1.22	1.44
8	30×30	1.4	1.22	1.55	2.08	1.16	1.39	1.64
9	30×30	1.6	1.37	1.75	2.31	1.15	1.54	1.84
10	30×30	1.8	1.53	1.95	2.52	1.14	1.68	2.03
11	30×30	1.9	1.6	2.04	2.62	1.13	1.75	2.12
12	32×32	1.2	1.13	1.44	2.25	1.25	1.41	1.65
13	32×32	1.4	1.31	1.66	2.55	1.24	1.6	1.89
14	32×32	1.6	1.48	1.88	2.84	1.23	1.78	2.12
15	32×32	1.8	1.64	2.09	3.11	1.22	1.95	2.33
16	32×32	1.9	1.72	2.19	3.24	1.22	2.03	2.44
17	38×38	1.2	1.36	1.73	3.86	1.49	2.03	2.37
18	38×38	1.4	1.57	2	4.41	1.48	2.32	2.72
19	38×38	1.6	1.78	2.26	4.92	1.47	2.59	3.06
20	38×38	1.8	1.98	2.52	5.42	1.47	2.85	3.39
21	38×38	1.9	2.08	2.65	5.65	1.46	2.97	3.54
22	72×72	1.2	2.64	3.36	27.9	2.88	7.76	8.89
23	72×72	1.4	3.06	3.9	32.2	2.87	8.95	10.29
24	72×72	1.6	3.49	4.44	36.4	2.86	10.11	11.66
25	72×72	1.8	3.9	4.97	40.5	2.85	11.24	13.01
26	72×72	1.9	4.11	5.23	42.5	2.85	11.8	13.68
27	80×80	1.2	2.94	3.75	38.57	3.21	9.64	11.03
28	80×80	1.4	3.42	4.35	44.54	3.2	11.13	12.77
29	80×80	1.6	3.89	4.95	50.38	3.19	12.6	14.49
30	80×80	1.8	4.35	5.55	56.1	3.18	14.03	16.18
31	80×80	1.9	4.59	5.84	58.91	3.18	14.73	17.02

SI No	Size (Depth x Width)	THK	Mass per Unit Length	Area of Section	Moment of Inertia about	Radius of Gyraton about	Elastic Modulus about	Plastic Modulus about
32	91.5 ×91.5	1.2	3.37	4.3	58.1	3.68	12.71	14.51
33	91.5 ×91.5	1.4	3.92	5	67.2	3.67	14.7	16.82
34	91.5 ×91.5	1.6	4.46	5.69	76.2	3.66	16.65	19.1
35	91.5 ×91.5	1.8	5	6.37	84.9	3.65	18.56	21.35
36	91.5 ×91.5	1.9	5.27	6.72	89.2	3.65	19.51	22.46
37	100×100	1.2	3.69	4.71	76.2	4.03	15.25	17.39
38	100×100	1.4	4.29	5.47	88.2	4.02	17.65	20.17
39	100×100	1.6	4.89	6.23	100	4.01	20	22.91
40	100×100	1.8	5.48	6.99	111.6	4	22.32	25.62
41	100×100	1.9	5.78	7.36	117.3	3.99	23.47	26.97

Tensile Properties

SI No	Grade Designation	Yield Strength <i>Min MPa</i>	Tensile Strength <i>Min MPa</i>	Elongation Percent Min <i>On GL 5.65 vSo</i>
(1)	(2)	(3)	(4)	(5)
1	YST240	240	410	10
2	YST310	310	450	8
3	YST355	355	490	8

TOLERANCES -

- (A) Outside Dimensions - $\pm 1\%$ of length of the side to be measured with minimum ± 0.50 mm
- (B) Thickness - $\pm 10\%$
- (C) Squareness of corner - $90^\circ - \pm 2^\circ$
- (D) Radii of corners - $< 3t$ (t = thickness of section)
- (E) Exact Length - not more than ± 6 mm or as agreed
- (F) Random Length - 4 mtr to 7 mtr
- (G) Concavity/Convexity - not more than 1% of size
- (H) Twist - 2 mm plus 0.5 mm/mtr length
- (I) Weight - $\pm 10\%$