Technical Specification References

Classification	Specification	Designation of Grade	Mechanical Properties					Chemical Composition %									Impact Properties	
			Tensile Strength N/mm²		Yield Strength Min.	Elongation Min.		C	Si	Mn	P	S	Mo	Al	CEV	Cu	Test Temperature	Min average absorbed energy for standard test piece
			t< 3mm	3mm ≤ t ≤ 40mm	N/mm²	CHS %	RHS or SHS %	Max	Max	Max	Max	Max	Max	Max	Max		°C	J
Cold formed welded structural hollow sections of non-alloy and fine grain steels	BS EN 10219	S235JRH	360-510	360-510	235	24		0.17	-	1.40	0.045	0.045	-	-	0.35	-	20	27
		S275J0H	430-580	410-560	275	20		0.20	-	1.50	0.040	0.040	-	-	0.40	-	0	27
		S275J2H	430-580	410-560	275	20		0.20	-	1.50	0.035	0.035	-	-	0.40	-	-20	27
		S355J0H	510-680	470-630	355	20		0.22	0.55	1.60	0.040	0.040	-	-	0.45	-	0	27
		S355J2H	510-680	470-630	355	20		0.22	0.55	1.60	0.035	0.035	-	-	0.45	-	-20	27
Structural Steel Hollow Sections for Australian Standard	AS 1163	C 250	320		250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	-	-
		C 250 L0	320		250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	0	27
		C 350	430		350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	-	-
		C 350 L0	430		350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	0	27
		C 450	500		450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	-	-
		C 450 L0	500		450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	0	27
Carbon Steel Square Pipes for General Structural Purposes	JIS G 3466	STKR 400	400		245	-	23 (N1)	0.25	-	-	0.04	0.04	-	-	-	-	-	-
		STKR 490	490		325	-	23 (N1)	0.18	0.55	1.50	0.04	0.04	-	-	-	-	-	-
Carbon Steel Tubes For General	JIS G 3444	STK 290	290		-	30 (N1) 20 (N2)	-	-	-	-	0.050	0.050	-	-	-	-	-	-
		STK 400	400		235	23 (N2) 18 (N2)	-	0.250	-	-	0.040	0.040	-	-	-	-	-	-
		STK 500	500		355	15 (N1) 10 (N2)	-	0.300 to 1.00	0.300	0.350	0.040	0.040	-	-	-	-	-	-
		STK 540	540		390	20 (N1) 16 (N2)	-	0.230	1.500	0.550	0.040	0.040	-	-	-	-	-	-
Cold-Formed Welded Carbon Steel Structural SHS & RHS	ASTM A-500	Grade A	310		270	As specified in ASTM A500 Specification		0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
		Grade B	400		315			0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
		Grade C	425		345			0.27	-	1.35	0.045	0.045	-	-	-	0.18 min	-	-
		Grade D	400		250			0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
Cold-Formed Welded Carbon Steel Structural CHS		Grade A	310		230			0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
		Grade B	400		290			0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
		Grade C	425		315			0.27	-	1.35	0.045	0.045	-	-	-	0.18 min	-	-
		Grade D	400		250			0.30	-	1.40	0.045	0.045	-	-	-	0.18 min	-	-
Lipped Channels & Plain Channels	JIS G 3350	SSC 400	400-540		245	21 (N2)		0.25	-	-	0.05	0.05	-	-	-		-	-
High Tensile C Purlin	Equivalent to ASTM A446 Gr. B				450	345		12	0.40	-	-	0.20	0.04	-	-		-	-

NOTES :

a) The impact properties of steel qualities JR and J0 are verified by laboratory testing only when specified at at the time of the inquiry and order.

b) The steel qualities J0 and J2 can be produced upon request with extra cost.

c) (N1) Test piece No. 11 and 12

d) (N2) Test piece No. 5
- When the tensile test is carried out on No. 5 and 12 test piece for the tube under 8mm in wall thickness, the minimum elongation value shall be determined by reducing 1.5% per 1mm of decrease in wall thickness from the values given in the Table above and rounding off the value obtained to integer in accordance with JIS Z 8401.

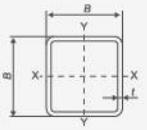
e) t - thickness
CHS - Circular Hollow Sections
RHS - Rectangular Hollow Sections
SHS - Square Hollow Sections

Tolerances - BS EN 10219

	Type	Cold formed welded structural hollow sections of non-alloy and fine grain steels	
		BS EN 10219	
Outside Dimension (OD)	**CHS**	± 1% with a min. of ± 0.5mm and a max. of ± 10mm	
	SHS & RHS	Size (mm)	Tolerance
		H, B <100mm 100mm ≤ H, B ≤ 200mm H, B > 200mm	± 1% with a min. of ± 0.5mm ± 0.8% ± 0.6%
Thickness (t)	**CHS**	For OD ≤ 406.4mm t ≤ 5mm t > 5mm For OD > 406.4mm	 ± 10% ± 0.50mm ± 10% with a max. of 2mm
	SHS & RHS	t ≤ 5mm t > 5mm	± 10% ± 0.50mm
Tolerances of Length	**CHS SHS & RHS**	-0mm, + 50mm	
Out of Roundness	**CHS**	2% for hollow sections having a diameter to thickness ratio not exceeding 100	
Concavity / convexity	**SHS & RHS**	max. 0.8% with a min. of 0.5mm	
Squareness of Size	**SHS & RHS**	90° ± 1°	
External Corner Profile	**SHS & RHS**	t ≤ 6mm 6mm < t ≤ 10mm 10mm < t	1.6T to 2.4T 2.0T to 3.0T 2.4T to 3.6T
Twist	**SHS & RHS**	2mm plus 0.50mm/m length	
Straightness	**CHS**	0.2% of total length	
	SHS & RHS	0.15% of total length	
Mass	**CHS**	± 6% on individual length	
	SHS & RHS	± 6% on individual length	

NOTES : CHS - Circular Hollow Sections
RHS- Rectangular Hollow Sections
SHS- Square Hollow Sections

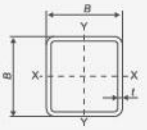
Cold Formed Square Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness												
B × B	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	As	L	Flange
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m^2/m	m	B/T
19 × 19	1.6	0.822	1.05	0.51	0.70	0.54	0.67	0.88	0.82	0.07	0.07	1215.92	6.88
20 × 20	1.6	0.873	1.11	0.61	0.74	0.61	0.75	1.03	0.92	0.07	0.08	1145.92	7.50
20 × 20	2.0	1.050	1.34	0.69	0.72	0.69	0.88	1.21	1.06	0.07	0.07	952.80	5.00
25 × 25	1.6	1.160	1.43	1.28	0.94	1.02	1.24	2.12	1.54	0.09	0.10	889.79	10.63
25 × 25	2.0	1.364	1.74	1.48	0.92	1.19	1.47	2.53	1.80	0.09	0.09	733.39	7.50
25 × 25	2.3	1.600	1.95	1.61	0.91	1.29	1.62	2.80	1.97	0.09	0.09	652.55	5.87
25 × 25	2.5	1.640	2.09	1.69	0.90	1.35	1.71	2.97	2.07	0.09	0.09	609.79	5.00
25 × 25	3.0	2.010	2.41	1.84	0.87	1.47	1.91	3.33	2.27	0.09	0.09	528.97	3.33
30 × 30	1.6	1.410	1.75	2.31	1.15	1.54	1.84	3.77	2.32	0.11	0.12	727.24	13.75
30 × 30	2.0	1.678	2.14	2.72	1.13	1.81	2.21	4.54	2.75	0.11	0.11	596.11	10.00
30 × 30	2.3	1.970	2.41	2.99	1.11	2.00	2.45	5.07	3.03	0.11	0.11	528.11	8.04
30 × 30	2.5	2.032	2.59	3.16	1.10	2.10	2.61	5.40	3.20	0.11	0.11	492.03	7.00
30 × 30	3.0	2.480	3.01	3.50	1.08	2.34	2.96	6.15	3.58	0.11	0.11	423.47	5.00
32 × 32	1.6	1.510	1.88	2.84	1.23	1.78	2.12	4.62	2.68	0.12	0.12	677.72	15.00
32 × 32	1.8	1.690	2.09	3.11	1.22	1.95	2.33	5.11	2.94	0.12	0.12	609.23	12.78
32 × 32	2.0	1.860	2.30	3.36	1.21	2.10	2.54	5.58	3.18	0.12	0.12	554.59	11.00
32 × 32	2.3	2.110	2.60	3.71	1.20	2.32	2.84	6.24	3.52	0.12	0.12	490.68	8.91
32 × 32	2.5	2.189	2.79	3.92	1.19	2.45	3.02	6.66	3.72	0.12	0.12	456.75	7.80
32 × 32	3.0	2.670	3.25	4.38	1.16	2.74	3.44	7.62	4.18	0.12	0.12	392.18	5.67
32 × 32	3.2	2.830	3.42	4.54	1.15	2.84	3.59	7.96	4.34	0.12	0.12	372.19	5.00
35 × 35	1.6	1.626	2.07	3.79	1.35	2.16	2.57	6.11	3.26	0.13	0.14	614.91	16.88
35 × 35	2.0	1.992	2.54	4.51	1.33	2.58	3.09	7.41	3.89	0.13	0.13	502.12	12.50
35 × 35	2.3	2.255	2.87	4.99	1.32	2.85	3.46	8.31	4.32	0.13	0.13	443.53	10.22
35 × 35	2.5	2.425	3.09	5.29	1.31	3.02	3.69	8.89	4.58	0.13	0.13	412.39	9.00
35 × 35	3.0	2.832	3.61	5.95	1.28	3.40	4.23	10.22	5.18	0.13	0.13	353.05	6.67
38 × 38	1.6	1.810	2.26	4.92	1.47	2.59	3.06	7.90	3.90	0.15	0.15	562.75	18.75
38 × 38	2.0	2.230	2.78	5.88	1.46	3.10	3.70	9.60	4.67	0.15	0.15	458.73	14.00
38 × 38	2.3	2.540	3.15	6.54	1.44	3.44	4.15	10.80	5.20	0.14	0.14	404.64	11.52
38 × 38	2.5	2.660	3.39	6.94	1.43	3.65	4.44	11.56	5.53	0.14	0.14	375.88	10.20
38 × 38	3.0	3.240	3.97	7.85	1.41	4.13	5.10	13.35	6.28	0.14	0.14	321.02	7.67
38 × 38	4.0	3.947	5.03	9.26	1.36	4.87	6.22	16.38	7.48	0.14	0.14	253.36	4.50
40 × 40	1.6	1.877	2.39	5.79	1.56	2.90	3.41	9.27	4.36	0.15	0.16	532.63	20.00
40 × 40	1.9	2.200	2.80	6.66	1.54	3.33	3.96	10.79	5.02	0.15	0.15	454.53	16.05
40 × 40	2.0	2.306	2.94	6.94	1.54	3.47	4.13	11.28	5.23	0.15	0.15	433.74	15.00
40 × 40	2.3	2.616	3.33	7.73	1.52	3.86	4.64	12.70	5.83	0.15	0.15	382.30	12.39
40 × 40	2.5	2.817	3.59	8.22	1.51	4.11	4.97	13.61	6.21	0.15	0.15	354.94	11.00
40 × 40	3.0	3.303	4.21	9.32	1.49	4.66	5.72	15.75	7.07	0.15	0.15	302.71	8.33
40 × 40	4.0	4.198	5.35	11.07	1.44	5.54	7.01	19.44	8.48	0.15	0.15	238.20	5.00
50 × 50	1.6	2.410	3.03	11.71	1.96	4.68	5.46	18.48	7.03	0.19	0.20	420.19	26.25
50 × 50	1.9	2.797	3.56	13.55	1.95	5.42	6.37	21.61	8.15	0.19	0.19	357.57	21.32
50 × 50	2.0	2.934	3.74	14.15	1.95	5.66	6.66	22.63	8.51	0.19	0.19	340.89	20.00
50 × 50	2.3	3.410	4.25	15.86	1.93	6.34	7.52	25.61	9.55	0.19	0.19	299.58	16.74
50 × 50	2.5	3.602	4.59	16.94	1.92	6.78	8.07	27.53	10.22	0.19	0.19	277.59	15.00
50 × 50	3.0	4.245	5.41	19.47	1.90	7.79	9.39	32.13	11.76	0.19	0.19	235.55	11.67
50 × 50	4.0	5.454	6.95	23.74	1.85	9.49	11.73	40.42	14.43	0.19	0.19	183.35	7.50
50 × 50	4.5	6.020	7.67	25.50	1.82	10.20	12.76	44.09	15.56	0.18	0.19	166.12	6.11
50 × 50	5.0	6.560	8.36	27.04	1.80	10.82	13.70	47.46	16.56	0.18	0.18	152.45	5.00
50 × 50	6.0	7.562	9.63	29.45	1.75	11.78	15.32	53.23	18.20	0.18	0.18	132.24	3.33
60 × 60	1.6	2.882	3.67	20.68	2.37	6.89	7.99	32.38	10.35	0.23	0.24	346.95	32.50
60 × 60	2.3	4.060	5.17	28.31	2.34	9.44	11.09	45.16	14.19	0.23	0.23	246.30	21.09
60 × 60	2.5	4.387	5.59	30.34	2.33	10.11	11.93	48.66	15.22	0.23	0.23	227.93	19.00
60 × 60	3.0	5.187	6.61	35.13	2.31	11.71	13.95	57.09	17.65	0.23	0.23	192.77	15.00
60 × 60	4.0	6.710	8.55	43.55	2.26	14.52	17.64	72.64	21.97	0.23	0.23	149.03	10.00
60 × 60	4.5	7.433	9.47	47.20	2.23	15.73	19.32	79.76	23.87	0.22	0.23	134.54	8.33

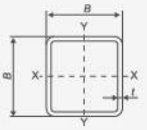
Cold Formed Square Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness												
B × B	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	As	L	Flange
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m^2/m	m	B/T
64 × 64	2.3	4.349	5.54	34.71	2.50	10.85	12.71	55.15	16.31	0.25	0.25	229.94	22.83
64 × 64	3.0	5.564	7.09	43.22	2.47	13.51	16.03	69.88	20.34	0.25	0.25	179.72	16.33
64 × 64	4.0	7.213	9.19	53.84	2.42	16.82	20.34	89.22	25.44	0.24	0.24	138.65	11.00
64 × 64	4.5	7.998	10.19	58.50	2.40	18.28	22.32	98.14	27.70	0.24	0.24	125.03	9.22
64 × 64	5.0	8.758	11.16	62.75	2.37	19.61	24.17	106.55	29.79	0.24	0.24	114.19	7.80
64 × 64	6.0	10.199	12.99	70.07	2.32	21.90	27.52	121.85	33.45	0.24	0.24	98.04	5.67
65 × 65	1.6	3.133	3.99	26.52	2.58	8.16	9.44	41.38	12.25	0.25	0.26	319.14	35.63
65 × 65	2.0	3.876	4.94	32.31	2.56	9.94	11.58	50.92	14.93	0.25	0.25	258.03	27.50
65 × 65	2.3	4.421	5.63	36.45	2.54	11.21	13.13	57.86	16.86	0.25	0.25	226.18	23.26
65 × 65	2.5	4.780	6.09	39.10	2.53	12.03	14.14	62.39	18.10	0.25	0.25	209.21	21.00
65 × 65	3.0	5.658	7.21	45.42	2.51	13.97	16.57	73.35	21.05	0.25	0.25	176.73	16.67
65 × 65	4.0	7.338	9.35	56.64	2.46	17.43	21.05	93.72	26.34	0.25	0.25	136.27	11.25
65 × 65	4.5	8.139	10.37	61.59	2.44	18.95	23.10	103.14	28.70	0.24	0.25	122.86	9.44
65 × 65	5.0	8.915	11.36	66.10	2.41	20.34	25.03	112.03	30.88	0.24	0.24	112.18	8.00
65 × 65	6.0	10.388	13.23	73.91	2.36	22.74	28.53	128.23	34.72	0.24	0.24	96.27	5.83
70 × 70	2.5	5.172	6.59	49.41	2.74	14.12	16.54	78.49	21.22	0.27	0.27	193.33	23.00
70 × 70	3.0	6.129	7.81	57.53	2.71	16.44	19.42	92.42	24.74	0.27	0.27	163.15	18.33
70 × 70	4.0	7.966	10.15	72.12	2.67	20.61	24.76	118.52	31.11	0.27	0.27	125.53	12.50
70 × 70	5.0	9.700	12.36	84.63	2.62	24.18	29.56	142.21	36.65	0.26	0.26	103.10	9.00
70 × 70	6.0	11.330	14.43	95.17	2.57	27.19	33.83	163.49	41.41	0.26	0.26	88.26	6.67
70 × 70	6.3	11.531	14.69	93.77	2.53	26.79	33.80	168.14	42.10	0.25	0.25	86.72	6.11
75 × 75	1.6	3.636	4.63	41.29	2.99	11.01	12.69	64.09	16.52	0.29	0.30	275.04	41.88
75 × 75	2.3	5.143	6.55	57.10	2.95	15.23	17.74	89.98	22.88	0.29	0.29	194.42	27.61
75 × 75	2.5	5.565	7.09	61.38	2.94	16.37	19.12	97.13	24.60	0.29	0.29	179.70	25.00
75 × 75	3.0	6.600	8.41	71.62	2.92	19.10	22.49	114.54	28.73	0.29	0.29	151.50	20.00
75 × 75	4.0	8.594	10.95	90.19	2.87	24.05	28.76	147.32	36.28	0.29	0.29	116.36	13.75
75 × 75	4.5	9.552	12.17	98.55	2.85	26.28	31.68	162.68	39.71	0.28	0.29	104.69	11.67
75 × 75	5.0	10.485	13.36	106.33	2.82	28.35	34.46	177.35	42.92	0.28	0.28	95.38	10.00
75 × 75	6.0	12.272	15.63	120.16	2.77	32.04	39.58	204.62	48.70	0.28	0.28	81.49	7.50
80 × 80	2.3	5.505	7.01	69.86	3.16	17.46	20.30	109.74	26.23	0.31	0.31	181.67	29.78
80 × 80	3.0	7.071	9.01	87.84	3.12	21.96	25.78	139.93	33.02	0.31	0.31	141.41	21.67
80 × 80	4.0	9.222	11.75	111.04	3.07	27.76	33.07	180.44	41.84	0.31	0.31	108.43	15.00
80 × 80	4.5	10.259	13.07	121.58	3.05	30.40	36.48	199.52	45.88	0.30	0.31	97.48	12.78
80 × 80	5.0	11.270	14.36	131.44	3.03	32.86	39.74	217.83	49.68	0.30	0.30	88.73	11.00
80 × 80	6.0	13.214	16.83	149.18	2.98	37.29	45.79	252.07	56.59	0.30	0.30	75.68	8.33
89 × 89	3.0	7.919	10.09	122.89	3.49	27.62	32.28	194.59	41.50	0.35	0.35	126.27	24.67
89 × 89	4.0	10.353	13.19	156.25	3.44	35.11	41.58	251.87	52.87	0.34	0.34	96.59	17.25
89 × 89	4.5	11.530	14.69	171.59	3.42	38.56	45.97	279.07	58.13	0.34	0.34	86.73	14.78
89 × 89	5.0	12.683	16.16	186.07	3.39	41.81	50.18	305.30	63.11	0.34	0.34	78.85	12.80
89 × 89	6.0	14.909	18.99	212.50	3.34	47.75	58.09	354.87	72.30	0.34	0.34	67.07	9.83
90 × 90	2.3	6.227	7.93	100.79	3.56	22.40	25.93	157.53	33.63	0.35	0.35	160.60	34.13
90 × 90	3.0	8.013	10.21	127.28	3.53	28.29	33.04	201.42	42.51	0.35	0.35	124.79	25.00
90 × 90	4.0	10.478	13.35	161.92	3.48	35.98	42.58	260.80	54.17	0.35	0.35	95.44	17.50
90 × 90	4.5	11.672	14.87	177.87	3.46	39.53	47.09	289.02	59.58	0.34	0.35	85.68	15.00
90 × 90	5.0	12.840	16.36	192.93	3.43	42.87	51.41	316.26	64.70	0.34	0.34	77.88	13.00
90 × 90	6.0	15.098	19.23	220.48	3.39	48.99	59.54	367.76	74.16	0.34	0.34	66.23	10.00
90 × 90	6.3	15.488	19.73	221.13	3.35	49.14	60.30	382.33	76.21	0.33	0.33	64.57	9.29
90 × 90	8.0	18.873	24.04	254.59	3.25	56.58	71.27	455.59	88.83	0.33	0.33	52.98	6.25
100 × 100	2.3	6.949	8.85	139.73	3.97	27.95	32.26	217.48	41.95	0.39	0.39	143.91	38.48
100 × 100	3.0	8.955	11.41	177.05	3.94	35.41	41.21	278.68	53.19	0.39	0.39	111.66	28.33
100 × 100	4.0	11.734	14.95	226.35	3.89	45.27	53.30	362.01	68.10	0.39	0.39	85.22	20.00
100 × 100	4.5	13.085	16.67	249.29	3.87	49.86	59.04	401.87	75.07	0.38	0.39	76.42	17.22
100 × 100	5.0	14.410	18.36	271.10	3.84	54.22	64.59	440.52	81.72	0.38	0.38	69.40	15.00
100 × 100	6.0	16.982	21.63	311.47	3.79	62.29	75.10	514.16	94.12	0.38	0.38	58.89	11.67
100 × 100	6.3	17.466	22.25	314.17	3.76	62.83	76.38	536.02	97.02	0.37	0.37	57.25	10.87
100 × 100	8.0	21.385	27.24	365.94	3.67	73.19	91.05	644.51	114.23	0.37	0.37	46.76	7.50
100 × 100	9.0	23.533	29.98	390.56	3.61	78.11	98.56	700.28	122.75	0.36	0.36	42.49	6.11

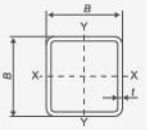
Cold Formed Square Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness												
B × B	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	As	L	Flange
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m^2/m	m	B/T
120 × 120	2.3	8.393	10.69	245.28	4.79	40.88	46.99	379.43	61.34	0.47	0.47	119.14	47.17
120 × 120	3.0	10.839	13.81	312.35	4.76	52.06	60.24	487.72	78.15	0.47	0.47	92.26	35.00
120 × 120	4.0	14.246	18.15	402.28	4.71	67.05	78.33	636.57	100.75	0.47	0.47	70.19	25.00
120 × 120	4.5	15.911	20.27	444.70	4.68	74.12	87.01	708.40	111.45	0.46	0.47	62.85	21.67
120 × 120	5.0	17.550	22.36	485.47	4.66	80.91	95.45	778.50	121.75	0.46	0.46	56.98	19.00
120 × 120	6.0	20.750	26.43	562.16	4.61	93.69	111.61	913.46	141.22	0.46	0.46	48.19	15.00
120 × 120	6.3	21.422	27.29	571.55	4.58	95.26	114.22	955.49	146.19	0.45	0.45	46.68	14.05
120 × 120	8.0	26.409	33.64	676.88	4.49	112.81	137.81	1162.95	174.58	0.45	0.45	37.87	10.00
120 × 120	9.0	29.185	37.18	729.99	4.43	121.66	150.31	1273.93	189.28	0.44	0.44	34.26	8.33
125 × 125	3.0	11.310	14.41	354.50	4.96	56.72	65.56	552.66	85.14	0.49	0.49	88.41	36.67
125 × 125	4.0	14.874	18.95	457.23	4.91	73.16	85.33	721.99	109.92	0.49	0.49	67.23	26.25
125 × 125	4.5	16.617	21.17	505.83	4.89	80.93	94.84	803.85	121.67	0.48	0.49	60.18	22.78
125 × 125	5.0	18.335	23.36	552.62	4.86	88.42	104.10	883.82	133.01	0.48	0.48	54.54	20.00
125 × 125	6.0	21.692	27.63	640.89	4.82	102.54	121.87	1038.10	154.49	0.48	0.48	46.10	15.83
125 × 125	6.3	22.411	28.55	652.59	4.78	104.41	124.86	1086.46	160.05	0.47	0.47	44.62	14.84
125 × 125	8.0	27.665	35.24	775.32	4.69	124.05	151.00	1325.35	191.66	0.47	0.47	36.15	10.63
125 × 125	9.0	30.598	38.98	837.82	4.64	134.05	164.94	1453.99	208.15	0.46	0.46	32.68	8.89
140 × 140	4.0	16.758	21.35	651.62	5.52	93.09	108.15	1023.32	139.80	0.55	0.55	59.67	30.00
140 × 140	5.0	20.690	26.36	790.56	5.48	112.94	132.30	1255.76	169.78	0.54	0.54	48.33	23.00
140 × 140	6.0	24.518	31.23	920.43	5.43	131.49	155.33	1478.77	197.90	0.54	0.54	40.79	18.33
140 × 140	6.3	25.379	32.33	940.82	5.39	134.40	159.62	1549.60	205.42	0.53	0.53	39.40	17.22
140 × 140	8.0	31.433	40.04	1126.77	5.30	160.97	194.18	1900.84	247.69	0.53	0.53	31.81	12.50
140 × 140	10.0	38.125	48.57	1311.67	5.20	187.38	230.38	2273.90	290.85	0.52	0.52	26.23	9.00
140 × 140	12.0	43.379	55.26	1398.33	5.03	199.76	252.87	2566.92	321.66	0.50	0.50	23.05	6.67
140 × 140	12.5	44.779	57.04	1425.23	5.00	203.60	259.25	2634.22	328.99	0.50	0.50	22.33	6.20
150 × 150	3.0	13.665	17.41	622.73	5.98	83.03	95.53	964.61	124.60	0.59	0.59	73.18	45.00
150 × 150	4.0	18.014	22.95	807.82	5.93	107.71	124.87	1264.76	161.73	0.59	0.59	55.51	32.50
150 × 150	4.5	20.150	25.67	896.30	5.91	119.51	139.08	1410.79	179.51	0.58	0.59	49.63	28.33
150 × 150	5.0	22.260	28.36	982.12	5.89	130.95	152.98	1554.13	196.79	0.58	0.58	44.92	25.00
150 × 150	6.0	26.402	33.63	1145.91	5.84	152.79	179.88	1832.69	229.84	0.58	0.58	37.88	20.00
150 × 150	6.3	27.357	34.85	1173.71	5.80	156.49	185.15	1921.60	238.81	0.57	0.57	36.55	18.81
150 × 150	8.0	33.945	43.24	1411.83	5.71	188.24	225.96	2364.08	289.03	0.57	0.57	29.46	13.75
150 × 150	9.0	37.663	47.98	1537.39	5.66	204.99	248.20	2607.94	315.95	0.56	0.56	26.55	11.67
150 × 150	12.5	48.704	62.04	1817.44	5.41	242.33	305.58	3320.84	389.30	0.54	0.54	20.53	7.00
160 × 160	4.0	19.270	24.55	987.17	6.34	123.40	142.78	1541.45	185.25	0.63	0.63	51.89	35.00
160 × 160	5.0	23.830	30.36	1202.36	6.29	150.29	175.16	1896.32	225.79	0.62	0.62	41.96	27.00
160 × 160	6.0	28.286	36.03	1405.48	6.25	175.69	206.24	2238.90	264.18	0.62	0.62	35.35	21.67
160 × 160	6.3	29.335	37.37	1442.13	6.21	180.27	212.57	2348.60	274.71	0.61	0.61	34.09	20.40
160 × 160	8.0	36.457	46.44	1741.23	6.12	217.65	260.14	2896.58	333.56	0.61	0.61	27.43	15.00
160 × 160	10.0	44.405	56.57	2047.67	6.02	255.96	310.95	3490.29	395.10	0.60	0.60	22.52	11.00
160 × 160	12.0	50.915	64.86	2224.36	5.86	278.05	346.05	3996.72	443.13	0.58	0.58	19.64	8.33
160 × 160	12.5	52.629	67.04	2275.04	5.83	284.38	355.66	4113.99	454.58	0.58	0.58	19.00	7.80
160 × 160	16.0	63.720	81.17	2546.40	5.60	318.30	412.67	4798.78	519.73	0.56	0.56	15.69	5.00
178 × 178	4.0	21.531	27.43	1373.47	7.08	154.32	178.05	2135.96	231.62	0.70	0.70	46.44	39.50
178 × 178	4.5	24.106	30.71	1527.36	7.05	171.61	198.64	2386.01	257.64	0.70	0.70	41.48	34.56
178 × 178	5.0	26.656	33.96	1677.44	7.03	188.48	218.86	2632.27	283.05	0.69	0.70	37.52	30.60
178 × 178	6.0	31.677	40.35	1966.30	6.98	220.93	258.22	3113.39	332.03	0.69	0.69	31.57	24.67
178 × 178	9.0	45.576	58.06	2689.90	6.81	302.24	361.49	4479.68	463.32	0.67	0.67	21.94	14.78
180 × 180	4.0	21.782	27.75	1421.74	7.16	157.97	182.21	2210.16	237.10	0.71	0.71	45.91	40.00
180 × 180	4.5	24.389	31.07	1581.26	7.13	175.70	203.30	2469.10	263.77	0.70	0.71	41.00	35.00
180 × 180	5.0	26.970	34.36	1736.87	7.11	192.99	224.02	2724.16	289.81	0.70	0.70	37.08	31.00
180 × 180	6.0	32.054	40.83	2036.52	7.06	226.28	264.35	3222.65	340.05	0.70	0.70	31.20	25.00
180 × 180	6.3	33.292	42.41	2095.65	7.03	232.85	273.09	3382.71	354.08	0.69	0.69	30.04	23.57
180 × 180	8.0	41.481	52.84	2545.86	6.94	282.87	335.70	4188.56	432.21	0.69	0.69	24.11	17.50
180 × 180	9.0	46.141	58.78	2789.12	6.89	309.90	370.39	4639.77	474.93	0.68	0.68	21.67	15.00

Cold Formed Square Hollow Sections



BS EN 10219

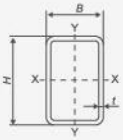
Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness												
B × B	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	As	L	Flange
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m^2/m	m	B/T
200 × 200	4.0	24.294	30.95	1968.13	7.97	196.81	226.44	3048.66	295.34	0.79	0.79	41.16	45.00
200 × 200	4.5	27.215	34.67	2191.54	7.95	219.15	252.86	3408.36	328.93	0.78	0.79	36.74	39.44
200 × 200	5.0	30.110	38.36	2410.09	7.93	241.01	278.87	3763.30	361.82	0.78	0.78	33.21	35.00
200 × 200	6.0	35.822	45.63	2832.75	7.88	283.27	329.67	4458.81	425.51	0.78	0.78	27.92	28.33
200 × 200	6.3	37.248	47.45	2921.53	7.85	292.15	341.16	4682.19	443.52	0.77	0.77	26.85	26.75
200 × 200	8.0	46.505	59.24	3566.25	7.76	356.63	420.86	5815.18	543.64	0.77	0.77	21.50	20.00
200 × 200	9.0	51.793	65.98	3918.45	7.71	391.85	465.35	6453.98	598.88	0.76	0.76	19.31	17.22
200 × 200	10.0	56.965	72.57	4251.06	7.65	425.11	508.08	7071.73	651.48	0.76	0.76	17.55	15.00
200 × 200	12.0	65.987	84.06	4730.22	7.50	473.02	575.61	8230.10	743.42	0.74	0.74	15.15	11.67
200 × 200	12.5	68.329	87.04	4859.42	7.47	485.94	593.50	8501.74	765.47	0.74	0.74	14.64	11.00
200 × 200	16.0	83.816	106.77	5624.95	7.26	562.50	705.57	10210.20	900.76	0.72	0.72	11.93	7.50
220 × 220	5.0	33.250	42.36	3238.02	8.74	294.37	339.73	5037.71	441.83	0.86	0.86	30.08	39.00
220 × 220	6.0	39.590	50.43	3813.36	8.70	346.67	402.18	5976.18	520.57	0.86	0.86	25.26	31.67
220 × 220	6.3	41.204	52.49	3939.93	8.66	358.18	416.80	6277.27	543.03	0.85	0.85	24.27	29.92
220 × 220	8.0	51.529	65.64	4828.01	8.58	438.91	515.62	7814.84	667.86	0.85	0.85	19.41	22.50
220 × 220	10.0	63.245	80.57	5782.46	8.47	525.68	624.65	9532.77	803.62	0.84	0.84	15.81	17.00
220 × 220	12.0	73.523	93.66	6486.85	8.32	589.71	711.99	11148.81	922.28	0.82	0.82	13.60	13.33
220 × 220	12.5	76.179	97.04	6673.98	8.29	606.73	734.92	11529.63	950.82	0.82	0.82	13.13	12.60
220 × 220	16.0	93.864	119.57	7812.23	8.08	710.20	880.83	13970.87	1129.44	0.80	0.80	10.65	8.75
250 × 250	5.0	37.960	48.36	4805.01	9.97	384.40	442.26	7443.01	576.84	0.98	0.98	26.34	45.00
250 × 250	6.0	45.242	57.63	5672.00	9.92	453.76	524.45	8842.52	681.15	0.98	0.98	22.10	36.67
250 × 250	6.3	47.139	60.05	5872.62	9.89	469.81	544.43	9290.29	711.19	0.97	0.97	21.21	34.68
250 × 250	8.0	59.065	75.24	7229.20	9.80	578.34	675.77	11597.77	878.18	0.97	0.97	16.93	26.25
250 × 250	9.0	65.923	83.98	7983.75	9.75	638.70	750.00	12913.31	971.70	0.96	0.96	15.17	22.78
250 × 250	10.0	72.665	92.57	8706.67	9.70	696.53	822.00	14197.22	1061.80	0.96	0.96	13.76	20.00
250 × 250	12.0	84.827	108.06	9859.42	9.55	788.75	943.56	16691.33	1226.49	0.94	0.94	11.79	15.83
250 × 250	12.5	87.954	112.04	10161.31	9.52	812.91	975.17	17282.65	1266.25	0.94	0.94	11.37	15.00
250 × 250	16.0	108.936	138.77	12047.13	9.32	963.77	1179.70	21146.30	1520.26	0.92	0.92	9.18	10.63
260 × 260	6.0	47.126	60.03	6404.54	10.33	492.66	568.80	9969.77	739.48	1.02	1.02	21.22	38.33
260 × 260	6.3	49.117	62.57	6634.95	10.30	510.38	590.75	10475.19	772.29	1.01	1.01	20.36	36.27
260 × 260	8.0	61.577	78.44	8178.02	10.21	629.08	733.95	13086.86	954.68	1.01	1.01	16.24	27.50
260 × 260	10.0	75.805	96.57	9864.65	10.11	758.82	893.78	16035.47	1155.85	1.00	1.00	13.19	21.00
260 × 260	12.0	88.595	112.86	11199.50	9.96	861.50	1027.95	18878.16	1337.48	0.98	0.98	11.29	16.67
260 × 260	12.5	91.879	117.04	11547.88	9.93	888.30	1062.76	19553.31	1381.37	0.98	0.98	10.88	15.80
260 × 260	16.0	113.960	145.17	13738.77	9.73	1056.83	1288.93	23985.66	1663.29	0.96	0.96	8.77	11.25
300 × 300	6.0	54.662	69.63	9963.67	11.96	664.24	764.23	15433.82	996.78	1.18	1.18	18.29	45.00
300 × 300	6.3	57.030	72.65	10341.99	11.93	689.47	794.94	16218.39	1041.86	1.17	1.17	17.53	42.62
300 × 300	9.0	80.053	101.98	14183.28	11.79	945.55	1102.14	22660.93	1434.44	1.16	1.16	12.49	28.33
300 × 300	12.0	103.667	132.06	17767.35	11.60	1184.49	1401.51	29514.02	1829.36	1.14	1.14	9.65	20.00
300 × 300	12.5	107.579	137.04	18348.13	11.57	1223.21	1450.60	30600.78	1891.80	1.14	1.14	9.30	19.00
300 × 300	16.0	134.056	170.77	22075.97	11.37	1471.73	1773.84	37836.71	2299.23	1.12	1.12	7.46	13.75
350 × 350	6.0	64.082	81.63	16007.75	14.00	914.73	1049.01	24682.71	1372.40	1.38	1.38	15.61	53.33
350 × 350	6.3	66.921	85.25	16644.63	13.97	951.12	1092.71	25939.00	1435.51	1.37	1.37	14.94	50.56
350 × 350	8.0	84.185	107.24	20680.70	13.89	1181.75	1365.58	32557.38	1787.14	1.37	1.37	11.88	38.75
350 × 350	9.0	94.183	119.98	22967.05	13.84	1312.40	1521.79	36371.83	1987.15	1.36	1.36	10.62	33.89
350 × 350	10.0	104.065	132.57	25189.14	13.78	1439.38	1674.83	40127.03	2182.18	1.36	1.36	9.61	30.00
350 × 350	12.0	122.507	156.06	29054.04	13.64	1660.23	1949.46	47598.08	2552.11	1.34	1.34	8.16	24.17
350 × 350	12.5	127.204	162.04	30044.88	13.62	1716.85	2019.77	49393.49	2642.20	1.34	1.34	7.86	23.00
350 × 350	16.0	159.176	202.77	36511.46	13.42	2086.37	2487.97	61480.98	3237.86	1.32	1.32	6.28	16.88

NOTE : The calculation of sectional properties is based on BS EN 10219 with the following corner geometry:

Size Range	Inside Corner radii mm	Outside Corner radii mm
Thickness ≤ 6mm	1 T	2 T
6mm < Thickness ≤10mm	1.5 T	2.5 T
Thickness > 10mm	2 T	3.0 T

* Please check with manufacturer the availability of the highlighted sizes.

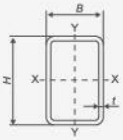
Rectangular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
19 × 38	1.6	1.33	1.66	2.91	0.97	1.33	0.77	1.53	1.02	1.95	1.20	2.46	1.79	0.11	769.41	6.88	18.75
20 × 40	2.0	1.678	2.14	4.05	1.34	1.38	0.79	2.02	1.34	2.61	1.60	3.45	2.36	0.11	596.11	5.00	15.00
20 × 40	2.5	2.032	2.59	4.69	1.54	1.35	0.77	2.35	1.54	3.09	1.88	4.06	2.72	0.11	492.03	3.00	11.00
20 × 40	3.0	2.361	3.01	5.21	1.68	1.32	0.75	2.60	1.68	3.50	2.12	4.57	3.00	0.11	423.47	1.67	8.33
25 × 38	1.6	1.49	1.85	3.55	1.85	1.39	1.00	1.87	1.48	2.30	1.72	3.99	2.45	0.12	689.45	10.63	18.75
25 × 50	1.6	1.79	2.23	7.02	2.37	1.77	1.03	2.81	1.90	3.53	2.17	5.85	3.29	0.14	570.82	10.63	26.25
25 × 50	2.0	2.149	2.74	8.38	2.81	1.75	1.01	3.35	2.25	4.26	2.62	7.06	3.92	0.14	465.43	7.50	20.00
25 × 50	2.3	2.51	3.10	9.31	3.10	1.73	1.00	3.72	2.48	4.78	2.92	7.90	4.34	0.14	410.64	5.87	16.74
25 × 50	2.5	2.621	3.34	9.89	3.28	1.72	0.99	3.95	2.62	5.11	3.12	8.43	4.60	0.14	381.51	5.00	15.00
25 × 50	3.0	3.19	3.91	11.17	3.67	1.69	0.97	4.47	2.93	5.86	3.56	9.64	5.18	0.14	325.95	3.33	11.67
25 × 75	1.6	2.380	3.03	19.74	3.47	2.55	1.07	5.26	2.78	6.81	3.11	9.93	5.05	0.19	420.19	10.63	41.88
25 × 75	1.9	2.797	3.56	22.84	3.98	2.53	1.06	6.09	3.18	7.94	3.61	11.50	5.80	0.19	357.57	8.16	34.47
25 × 75	2.0	2.934	3.74	23.84	4.14	2.53	1.05	6.36	3.31	8.31	3.77	12.01	6.04	0.19	340.89	7.50	32.50
25 × 75	2.3	3.338	4.25	26.70	4.59	2.51	1.04	7.12	3.67	9.37	4.23	13.46	6.72	0.19	299.58	5.87	27.61
25 × 75	2.5	3.602	4.59	28.52	4.87	2.49	1.03	7.60	3.89	10.06	4.53	14.38	7.14	0.19	277.59	5.00	25.00
25 × 75	3.0	4.245	5.41	32.72	5.49	2.46	1.01	8.72	4.39	11.69	5.21	16.50	8.10	0.19	235.55	3.33	20.00
25 × 75	4.0	5.454	6.95	39.72	6.46	2.39	0.96	10.59	5.17	14.56	6.39	20.01	9.61	0.19	183.35	1.25	13.75
25 × 75	4.5	6.020	7.67	42.56	6.81	2.36	0.94	11.35	5.45	15.82	6.89	21.40	10.19	0.18	166.12	0.56	11.67
30 × 50	2.0	2.306	2.94	9.54	4.29	1.80	1.21	3.81	2.86	4.74	3.33	9.77	4.84	0.15	433.74	10.00	20.00
30 × 50	2.5	2.817	3.59	11.30	5.05	1.77	1.19	4.52	3.37	5.70	3.98	11.74	5.72	0.15	354.94	7.00	15.00
30 × 50	3.0	3.303	4.21	12.83	5.70	1.75	1.16	5.13	3.80	6.57	4.58	13.53	6.49	0.15	302.71	5.00	11.67
30 × 50	4.0	4.198	5.35	15.25	6.69	1.69	1.12	6.10	4.46	8.05	5.58	16.53	7.71	0.15	238.20	2.50	7.50
30 × 50	5.0	4.990	6.36	16.87	7.33	1.63	1.07	6.75	4.88	9.20	6.34	18.77	8.55	0.14	200.42	1.00	5.00
30 × 60	1.6	2.129	2.71	12.49	4.25	2.15	1.25	4.16	2.83	5.19	3.20	10.35	4.90	0.17	469.78	13.75	32.50
30 × 60	1.9	2.498	3.18	14.43	4.88	2.13	1.24	4.81	3.25	6.04	3.72	12.03	5.64	0.17	400.26	10.79	26.58
30 × 60	2.3	2.977	3.79	16.82	5.65	2.11	1.22	5.61	3.76	7.11	4.37	14.14	6.56	0.17	335.93	8.04	21.09
30 × 60	3.0	3.774	4.81	20.50	6.80	2.06	1.19	6.83	4.53	8.82	5.39	17.48	7.95	0.17	264.94	5.00	15.00
30 × 80	1.6	2.631	3.35	25.79	5.54	2.77	1.29	6.45	3.69	8.22	4.11	15.11	6.62	0.21	380.07	13.75	45.00
30 × 80	1.9	3.095	3.94	29.94	6.38	2.76	1.27	7.48	4.25	9.60	4.79	17.58	7.65	0.21	323.11	10.79	37.11
30 × 80	2.3	3.699	4.71	35.13	7.42	2.73	1.25	8.78	4.94	11.36	5.64	20.69	8.91	0.21	270.34	8.04	29.78
30 × 80	3.0	4.716	6.01	43.35	8.99	2.69	1.22	10.84	6.00	14.23	7.01	25.65	10.87	0.21	212.02	5.00	21.67
30 × 110	2.0	4.190	5.34	71.62	9.00	3.66	1.30	13.02	6.00	17.15	6.69	27.35	11.11	0.27	238.69	10.00	50.00
30 × 110	2.5	5.172	6.59	86.79	10.74	3.63	1.28	15.78	7.16	20.97	8.11	33.03	13.29	0.27	193.33	7.00	39.00
30 × 110	3.0	6.129	7.81	100.91	12.29	3.59	1.25	18.35	8.19	24.59	9.44	38.25	15.26	0.27	163.15	5.00	31.67
30 × 110	4.0	7.966	10.15	126.08	14.87	3.52	1.21	22.92	9.91	31.29	11.82	47.38	18.59	0.27	125.53	2.50	22.50
35 × 65	1.6	2.380	3.03	16.87	6.47	2.36	1.46	5.19	3.70	6.39	4.17	15.10	6.32	0.19	420.19	16.88	35.63
35 × 65	1.9	2.797	3.56	19.54	7.46	2.34	1.45	6.01	4.26	7.46	4.85	17.61	7.30	0.19	357.57	13.42	29.21
35 × 65	2.0	2.934	3.74	20.40	7.78	2.34	1.44	6.28	4.44	7.80	5.07	18.42	7.62	0.19	340.89	12.50	27.50
35 × 65	2.3	3.338	4.25	22.88	8.69	2.32	1.43	7.04	4.96	8.81	5.72	20.79	8.53	0.19	299.58	10.22	23.26
35 × 65	2.5	3.602	4.59	24.45	9.26	2.31	1.42	7.52	5.29	9.45	6.13	22.31	9.10	0.19	277.59	9.00	21.00
35 × 65	3.0	4.245	5.41	28.10	10.57	2.28	1.40	8.65	6.04	10.99	7.11	25.91	10.44	0.19	235.55	6.67	16.67
35 × 65	4.0	5.454	6.95	34.28	12.72	2.22	1.35	10.55	7.27	13.73	8.83	32.24	12.68	0.19	183.35	3.75	11.25
38 × 65	1.6	2.455	3.13	17.83	7.79	2.39	1.58	5.49	4.10	6.70	4.63	17.39	6.91	0.20	407.29	18.75	35.63
38 × 65	1.9	2.886	3.68	20.68	9.00	2.37	1.56	6.36	4.74	7.82	5.40	20.30	8.00	0.20	346.48	15.00	29.21
38 × 65	2.0	3.028	3.86	21.59	9.39	2.37	1.56	6.64	4.94	8.18	5.64	21.24	8.35	0.20	330.28	14.00	27.50
38 × 65	2.3	3.446	4.39	24.23	10.50	2.35	1.55	7.46	5.53	9.24	6.37	24.01	9.36	0.20	290.17	11.52	23.26
38 × 65	2.5	3.720	4.74	25.91	11.20	2.34	1.54	7.97	5.90	9.92	6.83	25.79	10.00	0.20	268.81	10.20	21.00
38 × 65	3.0	4.387	5.59	29.83	12.83	2.31	1.51	9.18	6.75	11.55	7.93	30.02	11.50	0.20	227.96	7.67	16.67
38 × 65	3.2	4.646	5.92	31.29	13.42	2.30	1.51	9.63	7.06	12.17	8.35	31.62	12.05	0.20	215.23	6.88	15.31
38 × 65	4.0	5.643	7.19	36.52	15.53	2.25	1.47	11.24	8.17	14.46	9.89	37.55	14.04	0.19	177.22	4.50	11.25

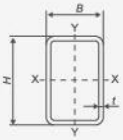
Rectangular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
38 × 75	1.6	2.706	3.45	25.34	8.85	2.71	1.60	6.76	4.66	8.34	5.21	21.15	8.03	0.22	369.49	18.75	41.88
38 × 75	1.9	3.184	4.06	29.44	10.24	2.69	1.59	7.85	5.39	9.75	6.08	24.71	9.30	0.22	314.03	15.00	34.47
38 × 75	2.0	3.342	4.26	30.77	10.68	2.69	1.58	8.20	5.62	10.21	6.36	25.86	9.71	0.22	299.25	14.00	32.50
38 × 75	2.3	3.807	4.85	34.61	11.97	2.67	1.57	9.23	6.30	11.55	7.19	29.24	10.90	0.22	262.65	11.52	27.61
38 × 75	2.5	4.113	5.24	37.06	12.78	2.66	1.56	9.88	6.73	12.42	7.72	31.42	11.66	0.22	243.15	10.20	25.00
38 × 75	3.0	4.858	6.19	42.83	14.67	2.63	1.54	11.42	7.72	14.49	8.98	36.62	13.43	0.22	205.86	7.67	20.00
38 × 75	3.2	5.149	6.56	44.99	15.37	2.62	1.53	12.00	8.09	15.29	9.46	38.60	14.09	0.22	194.23	6.88	18.44
38 × 75	4.0	6.271	7.99	52.84	17.85	2.57	1.50	14.09	9.40	18.26	11.25	45.93	16.48	0.21	159.48	4.50	13.75
38 × 75	4.5	6.938	8.84	57.12	19.17	2.54	1.47	15.23	10.09	19.95	12.25	50.04	17.77	0.21	144.13	3.44	11.67
40 × 60	2.0	2.934	3.74	18.41	9.83	2.22	1.62	6.14	4.92	7.47	5.65	20.70	8.12	0.19	340.89	15.00	25.00
40 × 60	2.5	3.602	4.59	22.07	11.74	2.19	1.60	7.36	5.87	9.06	6.84	25.14	9.72	0.19	277.59	11.00	19.00
40 × 60	3.0	4.245	5.41	25.38	13.44	2.17	1.58	8.46	6.72	10.53	7.94	29.28	11.17	0.19	235.55	8.33	15.00
40 × 60	4.0	5.454	6.95	30.99	16.28	2.11	1.53	10.33	8.14	13.16	9.89	36.67	13.65	0.19	183.35	5.00	10.00
40 × 60	5.0	6.560	8.36	35.33	18.43	2.06	1.48	11.78	9.21	15.38	11.52	42.85	15.60	0.18	152.45	3.00	7.00
40 × 80	1.6	2.882	3.67	30.71	10.52	2.89	1.69	7.68	5.26	9.47	5.87	25.23	9.08	0.23	346.95	20.00	45.00
40 × 80	1.9	3.393	4.32	35.73	12.19	2.88	1.68	8.93	6.09	11.08	6.85	29.49	10.53	0.23	294.70	16.05	37.11
40 × 80	2.3	4.060	5.17	42.08	14.27	2.85	1.66	10.52	7.14	13.15	8.11	34.95	12.37	0.23	246.30	12.39	29.78
40 × 80	3.0	5.187	6.61	52.25	17.56	2.81	1.63	13.06	8.78	16.54	10.16	43.88	15.28	0.23	192.77	8.33	21.67
40 × 80	4.0	6.710	8.55	64.79	21.49	2.75	1.59	16.20	10.74	20.91	12.77	55.24	18.84	0.23	149.03	5.00	15.00
40 × 100	2.5	5.172	6.59	79.32	18.78	3.47	1.69	15.86	9.39	20.23	10.59	50.52	16.76	0.27	193.33	11.00	35.00
40 × 100	3.0	6.129	7.81	92.34	21.67	3.44	1.67	18.47	10.84	23.75	12.38	59.05	19.39	0.27	163.15	8.33	28.33
40 × 100	4.0	7.966	10.15	115.70	26.69	3.38	1.62	23.14	13.35	30.26	15.65	74.53	24.04	0.27	125.53	5.00	20.00
40 × 100	5.0	9.700	12.36	135.60	30.76	3.31	1.58	27.12	15.38	36.09	18.52	87.92	27.90	0.26	103.10	3.00	15.00
50 × 70	2.0	3.562	4.54	31.48	18.76	2.63	2.03	8.99	7.50	10.80	8.58	37.45	12.20	0.23	280.78	20.00	30.00
50 × 70	2.5	4.387	5.59	38.01	22.59	2.61	2.01	10.86	9.04	13.16	10.45	45.75	14.72	0.23	227.93	15.00	23.00
50 × 70	3.0	5.187	6.61	44.05	26.10	2.58	1.99	12.59	10.44	15.40	12.21	53.62	17.06	0.23	192.77	11.67	18.33
50 × 70	4.0	6.710	8.55	54.67	32.22	2.53	1.94	15.62	12.89	19.48	15.41	68.07	21.19	0.23	149.03	7.50	12.50
50 × 70	5.0	8.130	10.36	63.46	37.20	2.48	1.90	18.13	14.88	23.06	18.20	80.77	24.64	0.22	123.01	5.00	9.00
50 × 75	1.6	3.008	3.83	30.51	16.39	2.82	2.07	8.14	6.56	9.75	7.40	33.67	10.78	0.24	332.46	26.25	41.88
50 × 75	1.9	3.542	4.51	35.54	19.05	2.81	2.05	9.48	7.62	11.42	8.65	39.46	12.55	0.24	282.29	21.32	34.47
50 × 75	2.0	3.719	4.74	37.16	19.91	2.80	2.05	9.91	7.96	11.96	9.06	41.35	13.12	0.24	268.92	20.00	32.50
50 × 75	2.3	4.241	5.40	41.90	22.41	2.79	2.04	11.17	8.96	13.56	10.26	46.92	14.78	0.24	235.81	16.74	27.61
50 × 75	2.5	4.584	5.84	44.95	24.00	2.77	2.03	11.99	9.60	14.59	11.04	50.54	15.85	0.24	218.17	15.00	25.00
50 × 75	3.0	5.423	6.91	52.17	27.76	2.75	2.00	13.91	11.10	17.09	12.91	59.27	18.38	0.24	184.40	11.67	20.00
50 × 75	4.0	7.024	8.95	64.96	34.34	2.69	1.96	17.32	13.74	21.66	16.33	75.33	22.88	0.24	142.37	7.50	13.75
50 × 75	4.5	7.786	9.92	70.56	37.19	2.67	1.94	18.82	14.87	23.75	17.88	82.66	24.86	0.23	128.44	6.11	11.67
50 × 75	5.0	8.522	10.86	75.65	39.75	2.64	1.91	20.17	15.90	25.71	19.33	89.52	26.67	0.23	117.34	5.00	10.00
50 × 75	6.0	9.917	12.63	84.37	44.06	2.58	1.87	22.50	17.63	29.23	21.92	101.82	29.79	0.23	100.84	3.33	7.50
50 × 90	2.0	4.190	5.34	57.88	23.37	3.29	2.09	12.86	9.35	15.74	10.50	53.37	15.88	0.27	238.69	20.00	40.00
50 × 90	2.5	5.172	6.59	70.26	28.24	3.27	2.07	15.61	11.29	19.25	12.82	65.30	19.24	0.27	193.33	15.00	31.00
50 × 90	3.0	6.129	7.81	81.85	32.74	3.24	2.05	18.19	13.10	22.60	15.03	76.67	22.36	0.27	163.15	11.67	25.00
50 × 90	4.0	7.966	10.15	102.71	40.71	3.18	2.00	22.82	16.28	28.82	19.09	97.70	27.96	0.27	125.53	7.50	17.50
50 × 90	5.0	9.700	12.36	120.60	47.37	3.12	1.96	26.80	18.95	34.41	22.70	116.47	32.75	0.26	103.10	5.00	13.00
50 × 100	1.6	3.636	4.63	61.29	21.08	3.64	2.13	12.26	8.43	15.04	9.33	50.08	14.53	0.29	275.04	26.25	57.50
50 × 100	1.9	4.288	5.46	71.62	24.55	3.62	2.12	14.32	9.82	17.65	10.94	58.75	16.94	0.29	233.20	21.32	47.63
50 × 100	2.0	4.504	5.74	74.98	25.67	3.62	2.12	15.00	10.27	18.50	11.46	61.59	17.73	0.29	222.05	20.00	45.00
50 × 100	2.3	5.143	6.55	84.83	28.95	3.60	2.10	16.97	11.58	21.03	13.01	69.95	20.02	0.29	194.42	16.74	38.48
50 × 100	2.5	5.565	7.09	91.20	31.06	3.59	2.09	18.24	12.42	22.67	14.01	75.39	21.49	0.29	179.70	15.00	35.00
50 × 100	3.0	6.600	8.41	106.46	36.06	3.56	2.07	21.29	14.42	26.66	16.44	88.56	25.01	0.29	151.50	11.67	28.33
50 × 100	4.0	8.594	10.95	134.14	44.95	3.50	2.03	26.83	17.98	34.10	20.93	112.99	31.35	0.29	116.36	7.50	20.00
50 × 100	4.5	9.552	12.17	146.61	48.87	3.47	2.00	29.32	19.55	37.56	23.00	124.25	34.18	0.28	104.69	6.11	17.22
50 × 100	5.0	10.485	13.36	158.19	52.45	3.44	1.98	31.64	20.98	40.84	24.95	134.87	36.80	0.28	95.38	5.00	15.00
50 × 100	6.0	12.272	15.63	178.75	58.67	3.38	1.94	35.75	23.47	46.90	28.52	154.20	41.43	0.28	81.49	3.33	11.67
50 × 100	6.3	12.520	15.95	175.68	58.19	3.32	1.91	35.14	23.27	46.87	28.63	158.08	42.07	0.27	79.87	2.94	10.87

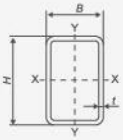
Rectangular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
50 × 125	2.3	6.046	7.70	148.24	35.50	4.39	2.15	23.72	14.20	29.94	15.75	93.92	25.25	0.34	165.39	16.74	49.35
50 × 125	2.5	6.546	8.34	159.61	38.12	4.37	2.14	25.54	15.25	32.31	16.98	101.26	27.13	0.34	152.76	15.00	45.00
50 × 125	3.0	7.778	9.91	187.02	44.35	4.34	2.12	29.92	17.74	38.11	19.96	119.03	31.64	0.34	128.57	11.67	36.67
50 × 125	4.0	10.164	12.95	237.53	55.56	4.28	2.07	38.01	22.22	49.03	25.53	152.13	39.82	0.34	98.38	7.50	26.25
50 × 125	4.5	11.319	14.42	260.68	60.55	4.25	2.05	41.71	24.22	54.17	28.12	167.45	43.52	0.33	88.35	6.11	22.78
50 × 125	5.0	12.447	15.86	282.46	65.16	4.22	2.03	45.19	26.07	59.10	30.58	181.95	46.95	0.33	80.34	5.00	20.00
50 × 125	6.0	14.627	18.63	322.00	73.28	4.16	1.98	51.52	29.31	68.32	35.12	208.52	53.10	0.33	68.37	3.33	15.83
50 × 125	6.3	14.993	19.10	319.41	73.33	4.09	1.96	51.11	29.33	68.77	35.52	214.59	54.16	0.32	66.70	2.94	14.84
50 × 150	2.3	6.949	8.85	235.71	42.04	5.16	2.18	31.43	16.82	40.28	18.49	118.46	30.49	0.39	143.91	16.74	60.22
50 × 150	3.0	8.955	11.41	298.55	52.65	5.12	2.15	39.81	21.06	51.43	23.49	150.22	38.28	0.39	111.66	11.67	45.00
50 × 150	4.0	11.734	14.95	381.39	66.16	5.05	2.10	50.85	26.47	66.47	30.13	192.14	48.30	0.39	85.22	7.50	32.50
50 × 150	4.5	13.085	16.67	419.82	72.23	5.02	2.08	55.98	28.89	73.60	33.24	211.60	52.85	0.38	76.42	6.11	28.33
50 × 150	5.0	14.410	18.36	456.29	77.87	4.99	2.06	60.84	31.15	80.48	36.20	230.05	57.11	0.38	69.40	5.00	25.00
50 × 150	6.0	16.982	21.63	523.47	87.89	4.92	2.02	69.80	35.16	93.48	41.72	263.99	64.77	0.38	58.89	3.33	20.00
50 × 150	6.3	17.466	22.25	522.83	88.47	4.85	1.99	69.71	35.39	94.62	42.40	272.24	66.26	0.37	57.25	2.94	18.81
60 × 80	2.0	4.190	5.34	49.53	31.87	3.05	2.44	12.38	10.62	14.73	12.11	61.22	17.08	0.27	238.69	25.00	35.00
60 × 80	2.5	5.172	6.59	60.13	38.61	3.02	2.42	15.03	12.87	18.02	14.81	75.07	20.73	0.27	193.33	19.00	27.00
60 × 80	3.0	6.129	7.81	70.05	44.89	3.00	2.40	17.51	14.96	21.16	17.37	88.35	24.14	0.27	163.15	15.00	21.67
60 × 80	4.0	7.966	10.15	87.92	56.12	2.94	2.35	21.98	18.71	26.99	22.12	113.12	30.32	0.27	125.53	10.00	15.00
60 × 80	5.0	9.700	12.36	103.28	65.66	2.89	2.31	25.82	21.89	32.24	26.38	135.53	35.67	0.26	103.10	7.00	11.00
60 × 100	2.5	5.957	7.59	103.09	46.88	3.69	2.49	20.62	15.63	25.11	17.68	103.25	26.23	0.31	167.86	19.00	35.00
60 × 100	3.0	7.071	9.01	120.57	54.65	3.66	2.46	24.11	18.22	29.57	20.79	121.67	30.64	0.31	141.41	15.00	28.33
60 × 100	4.0	9.222	11.75	152.58	68.68	3.60	2.42	30.52	22.89	37.94	26.60	156.27	38.68	0.31	108.43	10.00	20.00
60 × 100	5.0	11.270	14.36	180.77	80.83	3.55	2.37	36.15	26.94	45.59	31.88	187.86	45.75	0.30	88.73	7.00	15.00
60 × 100	6.0	13.214	16.83	205.30	91.20	3.49	2.33	41.06	30.40	52.54	36.64	216.44	51.92	0.30	75.68	5.00	11.67
60 × 100	6.3	13.510	17.21	203.38	90.91	3.44	2.30	40.68	30.30	52.77	36.92	223.36	53.00	0.29	74.02	4.52	10.87
60 × 120	2.5	6.742	8.59	161.23	55.15	4.33	2.53	26.87	18.38	33.20	20.56	132.57	31.75	0.35	148.32	19.00	43.00
60 × 120	3.0	8.013	10.21	189.12	64.40	4.30	2.51	31.52	21.47	39.18	24.21	156.34	37.14	0.35	124.79	15.00	35.00
60 × 120	4.0	10.478	13.35	240.74	81.25	4.25	2.47	40.12	27.08	50.49	31.08	201.12	47.05	0.35	95.44	10.00	25.00
60 × 120	4.5	11.672	14.87	264.52	88.88	4.22	2.44	44.09	29.63	55.82	34.30	222.14	51.58	0.34	85.68	8.33	21.67
60 × 120	5.0	12.840	16.36	286.97	95.99	4.19	2.42	47.83	32.00	60.95	37.38	242.23	55.85	0.34	77.88	7.00	19.00
60 × 120	6.0	15.098	19.23	328.01	108.77	4.13	2.38	54.67	36.26	70.57	43.12	279.67	63.60	0.34	66.23	5.00	15.00
60 × 120	6.3	15.488	19.73	326.97	109.16	4.07	2.35	54.49	36.39	71.24	43.69	289.35	65.14	0.33	64.57	4.52	14.05
75 × 100	2.3	6.046	7.70	112.28	72.30	3.82	3.06	22.46	19.28	26.64	21.92	138.34	30.98	0.34	165.39	27.61	38.48
75 × 100	3.0	7.778	9.91	141.75	91.07	3.78	3.03	28.35	24.29	33.93	27.89	176.64	39.09	0.34	128.57	20.00	28.33
75 × 100	3.2	8.263	10.53	149.79	96.17	3.77	3.02	29.96	25.64	35.95	29.53	187.25	41.30	0.34	121.01	18.44	26.25
75 × 100	4.0	10.164	12.95	180.25	115.42	3.73	2.99	36.05	30.78	43.70	35.86	228.25	49.70	0.34	98.38	13.75	20.00
75 × 100	4.5	11.319	14.42	197.95	126.55	3.71	2.96	39.59	33.75	48.30	39.61	252.68	54.60	0.33	88.35	11.67	17.22
75 × 100	5.0	12.447	15.86	214.64	137.00	3.68	2.94	42.93	36.53	52.72	43.21	276.18	59.22	0.33	80.34	10.00	15.00
75 × 100	6.0	14.627	18.63	245.11	155.96	3.63	2.89	49.02	41.59	61.00	49.93	320.42	67.71	0.33	68.37	7.50	11.67
75 × 100	6.3	14.993	19.10	244.92	156.33	3.58	2.86	48.98	41.69	61.63	50.54	332.53	69.47	0.32	66.70	6.90	10.87
75 × 125	2.3	6.949	8.85	191.52	87.51	4.65	3.14	30.64	23.33	36.99	26.10	189.93	39.08	0.39	143.91	27.61	49.35
75 × 125	3.0	8.955	11.41	242.85	110.52	4.61	3.11	38.86	29.47	47.26	33.29	242.86	49.46	0.39	111.66	20.00	36.67
75 × 125	4.0	11.734	14.95	310.76	140.65	4.56	3.07	49.72	37.51	61.13	42.96	314.53	63.14	0.39	85.22	13.75	26.25
75 × 125	4.5	13.085	16.67	342.40	154.54	4.53	3.04	54.78	41.21	67.73	47.55	348.61	69.50	0.38	76.42	11.67	22.78
75 × 125	5.0	14.410	18.36	372.51	167.68	4.50	3.02	59.60	44.71	74.10	51.96	381.52	75.55	0.38	69.40	10.00	20.00
75 × 125	6.0	16.982	21.63	428.29	191.76	4.45	2.98	68.53	51.14	86.17	60.28	443.81	86.75	0.38	58.89	7.50	15.83
75 × 125	9.0	23.533	29.98	534.46	237.98	4.22	2.82	85.51	63.46	112.74	78.75	596.39	111.90	0.36	42.49	3.33	8.89

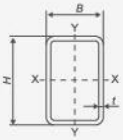
Rectangular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
75 × 150	2.3	7.852	10.00	298.43	102.71	5.46	3.20	39.79	27.39	48.77	30.28	243.63	47.18	0.44	127.36	27.61	60.22
75 × 150	3.0	10.133	12.91	379.59	129.97	5.42	3.17	50.61	34.66	62.45	38.69	311.78	59.82	0.44	98.69	20.00	45.00
75 × 150	4.0	13.304	16.95	488.00	165.88	5.37	3.13	65.07	44.24	81.07	50.06	404.26	76.59	0.44	75.16	13.75	32.50
75 × 150	4.5	14.851	18.92	538.94	182.54	5.34	3.11	71.86	48.68	89.97	55.48	448.36	84.42	0.43	67.34	11.67	28.33
75 × 150	5.0	16.372	20.86	587.74	198.36	5.31	3.08	78.37	52.90	98.61	60.71	491.02	91.89	0.43	61.08	10.00	25.00
75 × 150	6.0	19.337	24.63	679.08	227.56	5.25	3.04	90.54	60.68	115.08	70.63	572.03	105.80	0.43	51.71	7.50	20.00
75 × 150	6.3	19.939	25.40	685.55	230.88	5.20	3.01	91.41	61.57	117.25	72.18	595.83	109.13	0.42	50.15	6.90	18.81
75 × 150	8.0	24.525	31.24	806.27	269.01	5.08	2.93	107.50	71.74	140.76	86.30	714.49	128.51	0.42	40.77	4.38	13.75
75 × 150	9.0	27.066	34.48	865.50	287.29	5.01	2.89	115.40	76.61	153.03	93.60	775.20	138.10	0.41	36.95	3.33	11.67
80 × 100	2.5	6.742	8.59	126.86	90.17	3.84	3.24	25.37	22.54	29.98	25.77	165.84	35.73	0.35	148.32	27.00	35.00
80 × 100	3.0	8.013	10.21	148.81	105.64	3.82	3.22	29.76	26.41	35.39	30.40	196.12	41.91	0.35	124.79	21.67	28.33
80 × 100	4.0	10.478	13.35	189.47	134.17	3.77	3.17	37.89	33.54	45.62	39.15	253.79	53.38	0.35	95.44	15.00	20.00
80 × 100	5.0	12.840	16.36	225.94	159.61	3.72	3.12	45.19	39.90	55.09	47.24	307.55	63.72	0.34	77.88	11.00	15.00
80 × 100	6.0	15.098	19.23	258.39	182.10	3.67	3.08	51.68	45.53	63.82	54.67	357.38	72.98	0.34	66.23	8.33	11.67
80 × 100	6.3	15.488	19.73	258.77	182.81	3.62	3.04	51.75	45.70	64.58	55.39	371.35	74.97	0.33	64.57	7.70	10.87
80 × 120	2.5	7.527	9.59	195.75	105.19	4.52	3.31	32.63	26.30	39.07	29.65	215.82	43.23	0.39	132.85	27.00	43.00
80 × 120	3.0	8.955	11.41	230.20	123.43	4.49	3.29	38.37	30.86	46.20	35.02	255.47	50.80	0.39	111.66	21.67	35.00
80 × 120	4.0	11.734	14.95	294.59	157.29	4.44	3.24	49.10	39.32	59.77	45.23	331.24	64.93	0.39	85.22	15.00	25.00
80 × 120	4.5	13.085	16.67	324.58	172.95	4.41	3.22	54.10	43.24	66.22	50.07	367.34	71.51	0.38	76.42	12.78	21.67
80 × 120	5.0	14.410	18.36	353.14	187.78	4.39	3.20	58.86	46.94	72.45	54.74	402.27	77.77	0.38	69.40	11.00	19.00
80 × 120	6.0	16.982	21.63	406.06	215.03	4.33	3.15	67.68	53.76	84.25	63.55	468.54	89.40	0.38	58.89	8.33	15.00
80 × 120	6.3	17.466	22.25	408.50	217.11	4.28	3.12	68.08	54.28	85.57	64.68	487.82	92.07	0.37	57.25	7.70	14.05
80 × 140	4.0	12.990	16.55	429.60	180.42	5.10	3.30	61.37	45.10	75.51	51.31	411.60	76.48	0.43	76.98	15.00	30.00
80 × 140	5.0	15.980	20.36	517.06	215.94	5.04	3.26	73.87	53.99	91.80	62.24	500.51	91.83	0.42	62.58	11.00	23.00
80 × 140	6.0	18.866	24.03	597.00	247.96	4.98	3.21	85.29	61.99	107.09	72.43	583.80	105.83	0.42	53.01	8.33	18.33
80 × 140	6.3	19.444	24.77	602.72	251.42	4.93	3.19	86.10	62.85	109.08	73.97	608.51	109.19	0.41	51.43	7.70	17.22
80 × 140	8.0	23.897	30.44	708.09	293.31	4.82	3.10	101.16	73.33	130.82	88.45	731.35	128.77	0.41	41.85	5.00	12.50
80 × 160	3.0	10.839	13.81	463.81	159.03	5.80	3.39	57.98	39.76	71.41	44.26	380.34	68.59	0.47	92.26	21.67	48.33
80 × 160	3.2	11.529	14.69	491.40	168.25	5.78	3.38	61.42	42.06	75.80	46.95	403.61	72.60	0.47	86.74	20.00	45.00
80 × 160	4.0	14.246	18.15	597.71	203.54	5.74	3.35	74.71	50.89	92.86	57.39	494.10	88.03	0.47	70.19	15.00	35.00
80 × 160	4.5	15.911	20.27	660.92	224.31	5.71	3.33	82.62	56.08	103.15	63.66	548.53	97.16	0.46	62.85	12.78	30.56
80 × 160	5.0	17.550	22.36	721.69	244.11	5.68	3.30	90.21	61.03	113.16	69.74	601.34	105.90	0.46	56.98	11.00	27.00
80 × 160	6.0	20.750	26.43	836.01	280.89	5.62	3.26	104.50	70.22	132.32	81.31	702.06	122.27	0.46	48.19	8.33	21.67
80 × 160	6.3	21.422	27.29	846.48	285.72	5.57	3.24	105.81	71.43	135.11	83.25	732.25	126.31	0.45	46.68	7.70	20.40
80 × 160	8.0	26.409	33.64	1001.22	334.95	5.46	3.16	125.15	83.74	162.86	99.97	882.33	149.54	0.45	37.87	5.00	15.00
80 × 160	9.0	29.185	37.18	1078.66	359.07	5.39	3.11	134.83	89.77	177.51	108.72	960.40	161.25	0.44	34.26	3.89	12.78
100 × 150	3.0	11.310	14.41	460.64	247.64	5.65	4.15	61.42	49.53	73.48	55.76	507.20	81.40	0.49	88.41	28.33	45.00
100 × 150	4.0	14.874	18.95	594.60	318.57	5.60	4.10	79.28	63.71	95.67	72.50	661.63	104.94	0.49	67.23	20.00	32.50
100 × 150	4.5	16.617	21.17	658.06	351.96	5.58	4.08	87.74	70.39	106.34	80.53	736.08	116.08	0.48	60.18	17.22	28.33
100 × 150	5.0	18.335	23.36	719.20	384.02	5.55	4.05	95.89	76.80	116.73	88.34	808.68	126.81	0.48	54.54	15.00	25.00
100 × 150	6.0	21.692	27.63	834.69	444.19	5.50	4.01	111.29	88.84	136.68	103.30	948.34	147.07	0.48	46.10	11.67	20.00
100 × 150	6.3	22.411	28.55	848.27	452.66	5.45	3.98	113.10	90.53	139.88	105.90	991.64	152.27	0.47	44.62	10.87	18.81
100 × 150	8.0	27.665	35.24	1008.13	535.65	5.35	3.90	134.42	107.13	169.16	127.85	1205.89	181.85	0.47	36.15	7.50	13.75
100 × 150	9.0	30.598	38.98	1089.46	577.49	5.29	3.85	145.26	115.50	184.75	139.51	1320.32	197.16	0.46	32.68	6.11	11.67
100 × 180	4.0	16.758	21.35	926.04	373.89	6.59	4.18	102.89	74.78	125.89	84.02	853.85	127.06	0.55	59.67	20.00	40.00
100 × 180	5.0	20.690	26.36	1124.20	451.77	6.53	4.14	124.91	90.35	154.02	102.59	1044.79	153.88	0.54	48.33	15.00	31.00
100 × 180	6.0	24.518	31.23	1309.61	523.83	6.48	4.10	145.51	104.77	180.83	120.22	1226.68	178.88	0.54	40.79	11.67	25.00
100 × 180	6.3	25.379	32.33	1334.99	535.75	6.43	4.07	148.33	107.15	185.54	123.61	1283.41	185.46	0.53	39.40	10.87	23.57
100 × 180	8.0	31.433	40.04	1598.49	637.47	6.32	3.99	177.61	127.49	225.62	149.93	1565.24	222.49	0.53	31.81	7.50	17.50
100 × 180	10.0	38.125	48.57	1859.47	736.41	6.19	3.89	206.61	147.28	267.51	177.25	1858.62	259.61	0.52	26.23	5.00	13.00
100 × 180	12.0	43.379	55.26	1965.14	782.08	5.96	3.76	218.35	156.42	292.35	194.20	2072.88	284.53	0.50	23.05	3.33	10.00
100 × 180	12.5	44.779	57.04	2001.02	795.80	5.92	3.74	222.34	159.16	299.58	198.91	2121.70	290.41	0.50	22.33	3.00	9.40

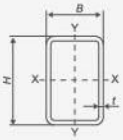
Rectangular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
100 × 200	4.0	18.014	22.95	1199.71	410.78	7.23	4.23	119.97	82.16	148.04	91.70	985.38	141.81	0.59	55.51	20.00	45.00
100 × 200	4.5	20.150	25.67	1331.44	454.64	7.20	4.21	133.14	90.93	164.89	102.02	1097.11	157.12	0.58	49.63	17.22	39.44
100 × 200	5.0	22.260	28.36	1459.25	496.94	7.17	4.19	145.93	99.39	181.37	112.09	1206.29	171.94	0.58	44.92	15.00	35.00
100 × 200	6.0	26.402	33.63	1703.31	576.91	7.12	4.14	170.33	115.38	213.27	131.50	1417.03	200.10	0.58	37.88	11.67	28.33
100 × 200	6.3	27.357	34.85	1739.24	591.15	7.06	4.12	173.92	118.23	219.13	135.41	1482.82	207.60	0.57	36.55	10.87	26.75
100 × 200	8.0	33.945	43.24	2090.84	705.36	6.95	4.04	209.08	141.07	267.26	164.65	1810.72	249.60	0.57	29.46	7.50	20.00
100 × 200	9.0	37.663	47.98	2275.59	764.42	6.89	3.99	227.56	152.88	293.45	180.46	1988.26	271.75	0.56	26.55	6.11	17.22
100 × 200	10.0	41.265	52.57	2444.40	817.74	6.82	3.94	244.44	163.55	318.08	195.25	2154.13	292.07	0.56	24.23	5.00	15.00
100 × 200	12.0	47.147	60.06	2606.70	875.58	6.59	3.82	260.67	175.12	350.01	215.32	2414.35	321.81	0.54	21.21	3.33	11.67
100 × 200	12.5	48.704	62.04	2658.89	892.15	6.55	3.79	265.89	178.43	359.13	220.78	2473.75	328.83	0.54	20.53	3.00	11.00
100 × 300	6.0	35.822	45.63	4776.79	842.35	10.23	4.30	318.45	168.47	411.43	187.90	2403.46	306.21	0.78	27.92	11.67	45.00
100 × 300	6.3	37.248	47.45	4906.80	868.12	10.17	4.28	327.12	173.62	424.88	194.45	2515.18	318.32	0.77	26.85	10.87	42.62
100 × 300	8.0	46.505	59.24	5977.86	1044.77	10.05	4.20	398.52	208.95	523.47	238.25	3080.34	385.24	0.77	21.50	7.50	32.50
100 × 300	10.0	56.965	72.57	7106.03	1224.41	9.90	4.11	473.74	244.88	630.91	285.25	3681.00	454.51	0.76	17.55	5.00	25.00
100 × 300	12.0	65.987	84.06	7808.31	1343.10	9.64	4.00	520.55	268.62	710.31	320.92	4177.46	508.49	0.74	15.15	3.33	20.00
100 × 300	12.5	68.329	87.04	8009.59	1373.92	9.59	3.97	533.97	274.78	731.85	330.16	4291.50	521.17	0.74	14.64	3.00	19.00
100 × 300	16.0	83.816	106.77	9157.36	1543.16	9.26	3.80	610.49	308.63	865.04	386.11	4938.77	592.31	0.72	11.93	1.25	13.75
120 × 200	4.0	19.270	24.55	1353.39	617.66	7.43	5.02	135.34	102.94	163.72	115.45	1345.35	172.49	0.63	51.89	25.00	45.00
120 × 200	5.0	23.830	30.36	1649.42	750.14	7.37	4.97	164.94	125.02	200.87	141.45	1652.00	209.87	0.62	41.96	19.00	35.00
120 × 200	6.0	28.286	36.03	1929.20	874.35	7.32	4.93	192.92	145.72	236.55	166.33	1946.73	245.12	0.62	35.35	15.00	28.33
120 × 200	6.3	29.335	37.37	1975.70	897.66	7.27	4.90	197.57	149.61	243.54	171.52	2040.16	254.71	0.61	34.09	14.05	26.75
120 × 200	8.0	36.457	46.44	2385.92	1078.97	7.17	4.82	238.59	179.83	297.98	209.49	2507.04	308.27	0.61	27.43	10.00	20.00
120 × 200	10.0	44.405	56.57	2805.73	1262.14	7.04	4.72	280.57	210.36	356.08	249.82	3007.03	363.69	0.60	22.52	7.00	15.00
120 × 200	12.0	50.915	64.86	3031.41	1367.87	6.84	4.59	303.14	227.98	395.13	277.77	3418.93	405.70	0.58	19.64	5.00	11.67
120 × 200	12.5	52.629	67.04	3099.00	1397.43	6.80	4.57	309.90	232.91	406.00	285.33	3513.84	415.67	0.58	19.00	4.60	11.00
150 × 200	4.0	21.154	26.95	1583.92	1021.03	7.67	6.16	158.39	136.14	187.24	154.07	1942.03	218.55	0.69	47.27	32.50	45.00
150 × 200	4.5	23.682	30.17	1761.49	1134.54	7.64	6.13	176.15	151.27	208.87	171.82	2168.52	242.99	0.68	42.23	28.33	39.44
150 × 200	5.0	26.185	33.36	1934.67	1245.04	7.62	6.11	193.47	166.00	230.12	189.23	2391.38	266.83	0.68	38.19	25.00	35.00
150 × 200	6.0	31.112	39.63	2268.03	1457.13	7.56	6.06	226.80	194.28	271.47	223.08	2826.19	312.72	0.68	32.14	20.00	28.33
150 × 200	6.3	32.302	41.15	2330.39	1499.15	7.53	6.04	233.04	199.89	280.15	230.41	2965.40	325.47	0.67	30.96	18.81	26.75
150 × 200	8.0	40.225	51.24	2828.55	1815.54	7.43	5.95	282.85	242.07	344.06	282.76	3664.86	396.44	0.67	24.86	13.75	20.00
150 × 200	9.0	44.728	56.98	3097.02	1985.32	7.37	5.90	309.70	264.71	379.40	311.65	4054.82	435.07	0.66	22.36	11.67	17.22
150 × 200	10.0	49.115	62.57	3347.73	2143.36	7.31	5.85	334.77	285.78	413.08	339.17	4428.41	471.45	0.66	20.36	10.00	15.00
150 × 200	12.0	56.567	72.06	3668.46	2352.53	7.14	5.71	366.85	313.67	462.81	380.46	5099.21	532.08	0.64	17.68	7.50	11.67
150 × 200	12.5	58.517	74.54	3759.16	2409.89	7.10	5.69	375.92	321.32	476.31	391.52	5255.16	546.55	0.64	17.09	7.00	11.00
150 × 250	4.0	24.294	30.95	2696.87	1234.24	9.33	6.32	215.75	164.57	259.61	183.27	2664.68	275.38	0.79	41.16	32.50	57.50
150 × 250	4.5	27.215	34.67	3003.79	1372.78	9.31	6.29	240.30	183.04	289.92	204.55	2976.93	306.49	0.78	36.74	28.33	50.56
150 × 250	5.0	30.110	38.36	3304.18	1507.95	9.28	6.27	264.33	201.06	319.76	225.48	3284.54	336.90	0.78	33.21	25.00	45.00
150 × 250	6.0	35.822	45.63	3885.56	1768.35	9.23	6.23	310.84	235.78	378.05	266.28	3885.80	395.65	0.78	27.92	20.00	36.67
150 × 250	6.3	37.248	47.45	4001.43	1824.59	9.18	6.20	320.11	243.28	390.90	275.68	4077.70	412.18	0.77	26.85	18.81	34.68
150 × 250	8.0	46.505	59.24	4885.79	2219.25	9.08	6.12	390.86	295.90	482.17	339.56	5050.45	503.96	0.77	21.50	13.75	26.25
150 × 250	9.0	51.793	65.98	5368.89	2433.25	9.02	6.07	429.51	324.43	533.10	375.10	5595.77	554.33	0.76	19.31	11.67	22.78
150 × 250	10.0	56.965	72.57	5825.01	2634.20	8.96	6.02	466.00	351.23	582.00	409.17	6120.70	602.08	0.76	17.55	10.00	20.00
150 × 250	12.0	65.987	84.06	6457.90	2925.29	8.77	5.90	516.63	390.04	657.96	463.26	7088.46	684.43	0.74	15.15	7.50	15.83
150 × 250	12.5	68.329	87.04	6632.67	3002.33	8.73	5.87	530.61	400.31	678.30	477.46	7314.55	704.10	0.74	14.64	7.00	15.00
150 × 250	16.0	83.816	106.77	7659.83	3452.73	8.47	5.69	612.79	460.36	805.30	565.84	8712.52	823.03	0.72	11.93	4.38	10.63
150 × 300	6.0	40.532	51.63	6073.51	2079.57	10.85	6.35	404.90	277.28	499.63	309.48	4988.47	478.60	0.88	24.67	20.00	45.00
150 × 300	6.3	42.193	53.75	6265.59	2150.03	10.80	6.32	417.71	286.67	517.39	320.94	5234.42	498.91	0.87	23.70	18.81	42.62
150 × 300	8.0	52.785	67.24	7683.57	2622.95	10.69	6.25	512.24	349.73	640.27	396.36	6490.59	611.52	0.87	18.94	13.75	32.50
150 × 300	10.0	64.815	82.57	9209.37	3125.03	10.56	6.15	613.96	416.67	775.91	479.17	7878.65	732.81	0.86	15.43	10.00	25.00
150 × 300	12.0	75.407	96.06	10298.07	3498.05	10.35	6.03	686.54	466.41	883.11	546.06	9153.10	836.91	0.84	13.26	7.50	20.00
150 × 300	12.5	78.142	99.54	10594.23	3594.78	10.32	6.01	706.28	479.30	911.53	563.39	9451.90	861.80	0.84	12.80	7.00	19.00
150 × 300	16.0	96.376	122.77	12387.01	4174.38	10.04	5.83	825.80	556.58	1092.24	673.04	11328.01	1014.95	0.82	10.38	4.38	13.75

Rectangular Hollow Sections



BS EN 10219

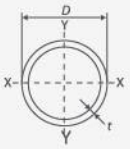
Designation		Weight	Cross Sectional Area	Second Moment of Area	Second Moment of Area	Radius of Gyration	Radius of Gyration	Elastic Modulus	Elastic Modulus	Plastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling	Ratio for Local Buckling
Size	Thickness																
B × H	T	M	A	I_{yy}	I_{zz}	i_{yy}	i_{zz}	W_{elyy}	W_{elyy}	W_{plyy}	W_{plzz}	L_t	C_t	As	L	Flange	Web
mm	mm	Kg/m	cm^2	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
180 × 260	5.0	33.250	42.36	4121.36	2349.53	9.86	7.45	317.03	261.06	377.44	294.02	4694.89	425.87	0.86	30.08	31.00	47.00
180 × 260	6.3	41.204	52.49	5012.66	2856.31	9.77	7.38	385.59	317.37	462.88	360.63	5844.33	522.95	0.85	24.27	23.57	36.27
180 × 260	8.0	51.529	65.64	6145.21	3493.23	9.68	7.29	472.71	388.14	572.67	445.78	7266.68	642.43	0.85	19.41	17.50	27.50
180 × 260	10.0	63.245	80.57	7363.31	4174.13	9.56	7.20	566.41	463.79	693.78	539.51	8850.30	771.94	0.84	15.81	13.00	21.00
180 × 260	12.0	73.523	93.66	8245.01	4679.25	9.38	7.07	634.23	519.92	789.87	614.91	10328.33	884.40	0.82	13.60	10.00	16.67
180 × 260	12.5	76.179	97.04	8482.47	4811.85	9.35	7.04	652.50	534.65	815.26	634.58	10676.03	911.40	0.82	13.13	9.40	15.80
180 × 260	16.0	93.864	119.57	9923.00	5613.55	9.11	6.85	763.31	623.73	976.61	759.44	12889.97	1079.42	0.80	10.65	6.25	11.25
200 × 300	4.5	34.280	43.67	5661.87	3051.65	11.39	8.36	377.46	305.17	448.70	340.84	6185.06	500.88	0.98	29.17	39.44	61.67
200 × 300	5.0	37.960	48.36	6241.05	3360.92	11.36	8.34	416.07	336.09	495.65	376.37	6835.78	551.89	0.98	26.34	35.00	55.00
200 × 300	6.0	45.242	57.63	7370.23	3962.19	11.31	8.29	491.35	396.22	587.83	446.07	8115.23	651.24	0.98	22.10	28.33	45.00
200 × 300	6.3	47.139	60.05	7624.39	4103.82	11.27	8.27	508.29	410.38	609.91	463.19	8523.54	679.80	0.97	21.21	26.75	42.62
200 × 300	8.0	59.065	75.24	9389.27	5041.67	11.17	8.19	625.95	504.17	757.07	574.46	10626.50	838.38	0.97	16.93	20.00	32.50
200 × 300	9.0	65.923	83.98	10371.42	5561.31	11.11	8.14	691.43	556.13	840.24	637.25	11822.37	926.98	0.96	15.17	17.22	28.33
200 × 300	10.0	72.665	92.57	11312.70	6057.73	11.05	8.09	754.18	605.77	920.91	698.08	12987.13	1012.19	0.96	13.76	15.00	25.00
200 × 300	12.0	84.827	108.06	12787.83	6853.74	10.88	7.96	852.52	685.37	1055.91	801.21	15235.56	1167.14	0.94	11.79	11.67	20.00
200 × 300	12.5	87.954	112.04	13178.86	7059.94	10.85	7.94	878.59	705.99	1091.22	827.88	15767.68	1204.48	0.94	11.37	11.00	19.00
200 × 300	16.0	108.936	138.77	15616.67	8340.26	10.61	7.75	1041.11	834.03	1319.44	999.97	19222.87	1441.73	0.92	9.18	7.50	13.75
200 × 400	4.5	41.345	52.67	11315.63	3911.76	14.66	8.62	565.78	391.18	689.55	428.81	9188.59	672.87	1.18	24.19	39.44	83.89
200 × 400	5.0	45.810	58.36	12489.82	4311.75	14.63	8.60	624.49	431.18	762.43	473.87	10158.74	742.01	1.18	21.83	35.00	75.00
200 × 400	6.0	54.662	69.63	14789.35	5091.63	14.57	8.55	739.47	509.16	905.99	562.47	12068.52	877.05	1.18	18.29	28.33	61.67
200 × 400	6.3	57.030	72.65	15329.74	5286.10	14.53	8.53	766.49	528.61	941.66	585.22	12672.84	916.17	1.17	17.53	26.75	58.49
200 × 400	8.0	71.625	91.24	18974.42	6517.08	14.42	8.45	948.72	651.71	1173.29	728.06	15820.22	1133.29	1.17	13.96	20.00	45.00
200 × 400	9.0	80.053	101.98	21023.33	7204.17	14.36	8.40	1051.17	720.42	1305.14	809.15	17615.46	1255.32	1.16	12.49	17.22	39.44
200 × 400	10.0	88.365	112.57	23002.65	7864.40	14.30	8.36	1150.13	786.44	1433.74	888.08	19368.49	1373.21	1.16	11.32	15.00	35.00
200 × 400	12.0	103.667	132.06	26248.42	8977.26	14.10	8.24	1312.42	897.73	1656.21	1026.81	22782.10	1591.35	1.14	9.65	11.67	28.33
200 × 400	12.5	107.579	137.04	27100.50	9260.46	14.06	8.22	1355.02	926.05	1713.94	1062.25	23594.07	1644.04	1.14	9.30	11.00	27.00
200 × 400	16.0	134.056	170.77	32547.00	11055.57	13.81	8.05	1627.35	1105.56	2093.30	1294.37	28928.33	1983.78	1.12	7.46	7.50	20.00
250 × 350	6.0	54.662	69.63	12457.31	7458.44	13.38	10.35	711.85	596.68	842.61	670.85	14553.72	966.84	1.18	18.29	36.67	53.33
250 × 350	6.3	57.030	72.65	12923.13	7743.81	13.34	10.32	738.46	619.51	876.17	697.96	15291.03	1010.43	1.17	17.53	34.68	50.56
250 × 350	8.0	71.625	91.24	16001.29	9572.62	13.24	10.24	914.36	765.81	1091.98	869.37	19136.32	1252.81	1.17	13.96	26.25	38.75
250 × 350	10.0	88.365	112.57	19407.47	11588.34	13.13	10.15	1109.00	927.07	1334.83	1062.00	23499.74	1522.29	1.16	11.32	20.00	30.00
250 × 350	12.0	103.667	132.06	22196.52	13260.94	12.96	10.02	1268.37	1060.87	1543.86	1229.16	27749.26	1769.81	1.14	9.65	15.83	24.17
250 × 350	12.5	107.579	137.04	22922.48	13689.96	12.93	9.99	1309.86	1095.20	1597.89	1272.05	28763.59	1829.81	1.14	9.30	15.00	23.00
250 × 350	16.0	134.056	170.77	27580.16	16434.44	12.71	9.81	1576.01	1314.76	1953.57	1554.10	35497.19	2220.26	1.12	7.46	10.63	16.88
300 × 400	6.3	66.921	85.25	20212.64	13059.59	15.40	12.38	1010.63	870.64	1189.69	979.97	24851.94	1404.06	1.37	14.94	42.62	58.49
300 × 400	8.0	84.185	107.24	25121.83	16212.10	15.31	12.30	1256.09	1080.81	1486.89	1224.27	31178.89	1747.24	1.37	11.88	32.50	45.00
300 × 400	9.0	94.183	119.98	27904.19	17995.14	15.25	12.25	1395.21	1199.68	1657.04	1364.04	34822.39	1942.30	1.36	10.62	28.33	39.44
300 × 400	10.0	104.065	132.57	30609.32	19726.03	15.20	12.20	1530.47	1315.07	1823.74	1500.91	38407.04	2132.38	1.36	9.61	25.00	35.00
300 × 400	12.0	122.507	156.06	35283.94	22746.87	15.04	12.07	1764.20	1516.46	2121.81	1747.11	45527.09	2492.45	1.34	8.16	20.00	28.33
300 × 400	12.5	127.204	162.04	36488.52	23517.41	15.01	12.05	1824.43	1567.83	2198.31	1809.97	47237.09	2580.08	1.34	7.86	19.00	27.00
300 × 400	16.0	159.176	202.77	44350.31	28535.28	14.79	11.86	2217.52	1902.35	2707.70	2228.24	58730.43	3158.63	1.32	6.28	13.75	20.00

NOTE : The calculation of sectional properties is based on BS EN 10219 with the following corner geometry:

Size Range	Inside Corner radii mm	Outside Corner radii mm
Thickness ⩽ 6mm	1 T	2 T
6mm < Thickness ⩽ 10mm	1.5 T	2.5 T
Thickness > 10mm	2 T	3.0 T

* Please check with manufacturer the availability of the highlighted sizes.

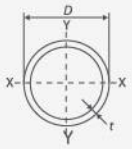
Cold Formed Circular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	L	B/T
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m	
21.3	2.0	0.952	1.21	0.57	0.69	0.54	0.75	1.14	1.07	0.07	1050.49	10.65
21.3	2.5	1.159	1.48	0.66	0.67	0.62	0.89	1.33	1.25	0.07	862.75	8.52
21.3	3.0	1.354	1.72	0.74	0.66	0.70	1.01	1.48	1.39	0.07	738.60	7.10
26.9	2.0	1.228	1.56	1.22	0.88	0.91	1.24	2.44	1.81	0.08	814.24	13.45
26.9	2.5	1.504	1.92	1.44	0.87	1.07	1.49	2.88	2.14	0.08	664.74	10.76
26.9	3.0	1.768	2.25	1.63	0.85	1.21	1.72	3.27	2.43	0.08	565.54	8.97
33.7	2.0	1.564	1.99	2.51	1.12	1.49	2.01	5.02	2.98	0.11	639.57	16.85
33.7	2.5	1.924	2.45	3.00	1.11	1.78	2.44	6.00	3.56	0.11	519.86	13.48
33.7	3.0	2.271	2.89	3.44	1.09	2.04	2.84	6.88	4.08	0.11	440.27	11.23
42.4	2.0	1.993	2.54	5.19	1.43	2.45	3.27	10.38	4.90	0.13	501.84	21.20
42.4	2.5	2.460	3.13	6.26	1.41	2.95	3.99	12.52	5.91	0.13	406.51	16.96
42.4	3.0	2.915	3.71	7.25	1.40	3.42	4.67	14.49	6.84	0.13	343.05	14.13
42.4	4.0	3.788	4.83	8.99	1.36	4.24	5.92	17.98	8.48	0.13	263.99	10.60
48.3	2.0	2.284	2.91	7.81	1.64	3.23	4.29	15.62	6.47	0.15	437.89	24.15
48.3	2.5	2.824	3.60	9.46	1.62	3.92	5.25	18.92	7.83	0.15	354.14	19.32
48.3	3.0	3.351	4.27	11.00	1.61	4.55	6.17	22.00	9.11	0.15	298.37	16.10
48.3	4.0	4.370	5.57	13.77	1.57	5.70	7.87	27.54	11.40	0.15	228.83	12.08
48.3	5.0	5.339	6.80	16.15	1.54	6.69	9.42	32.31	13.38	0.15	187.29	9.66
60.3	2.0	2.876	3.66	15.58	2.06	5.17	6.80	31.16	10.34	0.19	347.76	30.15
60.3	2.5	3.564	4.54	18.99	2.05	6.30	8.36	37.99	12.60	0.19	280.62	24.12
60.3	3.0	4.239	5.40	22.22	2.03	7.37	9.86	44.45	14.74	0.19	235.89	20.10
60.3	4.0	5.554	7.07	28.17	2.00	9.34	12.70	56.35	18.69	0.19	180.06	15.08
60.3	5.0	6.819	8.69	33.48	1.96	11.10	15.33	66.95	22.21	0.19	146.65	12.06
76.1	2.0	3.655	4.66	31.98	2.62	8.40	10.98	63.96	16.81	0.24	273.61	38.05
76.1	2.5	4.538	5.78	39.19	2.60	10.30	13.55	78.37	20.60	0.24	220.38	30.44
76.1	3.0	5.408	6.89	46.10	2.59	12.11	16.04	92.19	24.23	0.24	184.90	25.37
76.1	4.0	7.112	9.06	59.06	2.55	15.52	20.81	118.11	31.04	0.24	140.60	19.03
76.1	5.0	8.767	11.17	70.92	2.52	18.64	25.32	141.84	37.28	0.24	114.06	15.22
76.1	6.0	10.373	13.21	81.76	2.49	21.49	29.56	163.52	42.97	0.24	96.41	12.68
76.1	6.3	10.845	13.81	84.82	2.48	22.29	30.78	169.64	44.58	0.24	92.21	12.08
88.9	2.0	4.286	5.46	51.57	3.07	11.60	15.11	103.14	23.20	0.28	233.31	44.45
88.9	2.5	5.327	6.79	63.37	3.06	14.26	18.67	126.75	28.51	0.28	187.73	35.56
88.9	3.0	6.355	8.10	74.76	3.04	16.82	22.15	149.53	33.64	0.28	157.35	29.63
88.9	4.0	8.375	10.67	96.34	3.00	21.67	28.85	192.68	43.35	0.28	119.40	22.23
88.9	5.0	10.346	13.18	116.37	2.97	26.18	35.24	232.75	52.36	0.28	96.66	17.78
88.9	6.0	12.267	15.63	134.94	2.94	30.36	41.31	269.88	60.72	0.28	81.52	14.82
88.9	6.3	12.833	16.35	140.24	2.93	31.55	43.07	280.47	63.10	0.28	77.92	14.11
101.6	2.0	4.913	6.26	77.63	3.52	15.28	19.84	155.26	30.56	0.32	203.56	50.80
101.6	2.5	6.110	7.78	95.61	3.50	18.82	24.56	191.22	37.64	0.32	163.67	40.64
101.6	3.0	7.295	9.29	113.04	3.49	22.25	29.17	226.07	44.50	0.32	137.08	33.87
101.6	4.0	9.628	12.26	146.28	3.45	28.80	38.12	292.57	57.59	0.32	103.87	25.40
101.6	5.0	11.912	15.17	177.47	3.42	34.93	46.70	354.94	69.87	0.32	83.95	20.32
101.6	6.0	14.146	18.02	206.68	3.39	40.68	54.91	413.35	81.37	0.32	70.69	16.93
101.6	6.3	14.807	18.86	215.07	3.38	42.34	57.30	430.13	84.67	0.32	67.54	16.13
114.3	2.5	6.893	8.78	137.26	3.95	24.02	31.25	274.52	48.03	0.36	145.08	45.72
114.3	3.0	8.234	10.49	162.55	3.94	28.44	37.17	325.10	56.88	0.36	121.44	38.10
114.3	4.0	10.881	13.86	211.07	3.90	36.93	48.69	422.13	73.86	0.36	91.91	28.58
114.3	5.0	13.478	17.17	256.92	3.87	44.96	59.77	513.84	89.91	0.36	74.20	22.86
114.3	6.0	16.025	20.41	300.21	3.83	52.53	70.45	600.42	105.06	0.36	62.40	19.05
114.3	6.3	16.780	21.38	312.71	3.82	54.72	73.57	625.43	109.44	0.36	59.60	18.14
114.3	8.0	20.972	26.72	379.49	3.77	66.40	90.57	758.98	132.81	0.36	47.68	14.29
139.7	3.0	10.114	12.88	301.09	4.83	43.11	56.07	602.18	86.21	0.44	98.88	46.57
139.7	4.0	13.386	17.05	392.86	4.80	56.24	73.68	785.72	112.49	0.44	74.70	34.93
139.7	5.0	16.610	21.16	480.54	4.77	68.80	90.76	961.08	137.59	0.44	60.21	27.94
139.7	6.0	19.783	25.20	564.26	4.73	80.78	107.33	1128.52	161.56	0.44	50.55	23.28
139.7	6.3	20.726	26.40	588.62	4.72	84.27	112.20	1177.24	168.54	0.44	48.25	22.17
139.7	8.0	25.983	33.10	720.29	4.66	103.12	138.93	1440.58	206.24	0.44	38.49	17.46

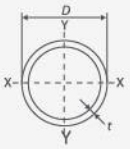
Cold Formed Circular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	L	B/T
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m	
168.3	3.0	12.230	15.58	532.28	5.85	63.25	81.98	1064.57	126.51	0.53	81.77	56.10
168.3	4.0	16.208	20.65	697.09	5.81	82.84	108.00	1394.18	165.68	0.53	61.70	42.08
168.3	5.0	20.136	25.65	855.85	5.78	101.70	133.38	1711.69	203.41	0.53	49.66	33.66
168.3	6.0	24.015	30.59	1008.69	5.74	119.87	158.12	2017.39	239.74	0.53	41.64	28.05
168.3	6.3	25.170	32.06	1053.42	5.73	125.18	165.42	2106.84	250.37	0.53	39.73	26.71
168.3	8.0	31.626	40.29	1297.27	5.67	154.16	205.74	2594.54	308.32	0.53	31.62	21.04
168.3	10.0	39.039	49.73	1563.98	5.61	185.86	250.92	3127.97	371.71	0.53	25.62	16.83
177.8	4.0	17.145	21.84	825.09	6.15	92.81	120.85	1650.17	185.62	0.56	58.33	44.45
177.8	5.0	21.308	27.14	1013.97	6.11	114.06	149.34	2027.94	228.11	0.56	46.93	35.56
177.8	6.0	25.421	32.38	1196.22	6.08	134.56	177.16	2392.43	269.12	0.56	39.34	29.63
177.8	6.3	26.646	33.94	1249.62	6.07	140.56	185.38	2499.24	281.13	0.56	37.53	28.22
177.8	8.0	33.500	42.68	1541.44	6.01	173.39	230.83	3082.87	346.78	0.56	29.85	22.23
177.8	10.0	41.382	52.72	1861.98	5.94	209.45	281.90	3723.96	418.89	0.56	24.17	17.78
177.8	12.0	49.067	62.51	2159.06	5.88	242.86	330.45	4318.11	485.73	0.56	20.38	14.82
177.8	12.5	50.957	64.91	2229.79	5.86	250.82	342.20	4459.59	501.64	0.56	19.62	14.22
193.7	4.0	18.713	23.84	1072.79	6.71	110.77	143.97	2145.58	221.54	0.61	53.44	48.43
193.7	5.0	23.268	29.64	1320.23	6.67	136.32	178.08	2640.46	272.63	0.61	42.98	38.74
193.7	6.0	27.774	35.38	1559.72	6.64	161.05	211.46	3119.45	322.09	0.61	36.01	32.28
193.7	6.3	29.116	37.09	1630.05	6.63	168.31	221.33	3260.09	336.61	0.61	34.35	30.75
193.7	8.0	36.637	46.67	2015.54	6.57	208.11	276.05	4031.07	416.22	0.61	27.29	24.21
193.7	10.0	45.303	57.71	2441.59	6.50	252.10	337.79	4883.18	504.20	0.61	22.07	19.37
193.7	12.0	53.772	68.50	2839.20	6.44	293.15	396.75	5678.40	586.31	0.61	18.60	16.14
193.7	12.5	55.858	71.16	2934.31	6.42	302.97	411.07	5868.62	605.95	0.61	17.90	15.50
219.1	4.0	21.219	27.03	1563.84	7.61	142.75	185.09	3127.67	285.50	0.69	47.13	54.78
219.1	5.0	26.400	33.63	1928.04	7.57	176.00	229.24	3856.09	351.99	0.69	37.88	43.82
219.1	6.0	31.532	40.17	2281.95	7.54	208.30	272.54	4563.89	416.60	0.69	31.71	36.52
219.1	6.3	33.062	42.12	2386.14	7.53	217.81	285.37	4772.28	435.63	0.69	30.25	34.78
219.1	8.0	41.648	53.06	2959.63	7.47	270.16	356.68	5919.27	540.33	0.69	24.01	27.39
219.1	10.0	51.567	65.69	3598.44	7.40	328.47	437.56	7196.88	656.95	0.69	19.39	21.91
219.1	12.0	61.289	78.07	4199.88	7.33	383.38	515.26	8399.76	766.75	0.69	16.32	18.26
219.1	12.5	63.688	81.13	4344.58	7.32	396.58	534.20	8689.16	793.17	0.69	15.70	17.53
244.5	5.0	29.532	37.62	2698.58	8.47	220.74	286.84	5397.16	441.49	0.77	33.86	48.90
244.5	6.0	35.291	44.96	3198.53	8.43	261.64	341.37	6397.07	523.28	0.77	28.34	40.75
244.5	6.3	37.009	47.14	3346.03	8.42	273.70	357.54	6692.05	547.41	0.77	27.02	38.81
244.5	8.0	46.660	59.44	4160.45	8.37	340.32	447.63	8320.89	680.65	0.77	21.43	30.56
244.5	10.0	57.831	73.67	5073.15	8.30	414.98	550.24	10146.29	829.96	0.77	17.29	24.45
244.5	12.0	68.806	87.65	5938.34	8.23	485.75	649.25	11876.69	971.51	0.77	14.53	20.38
244.5	12.5	71.518	91.11	6147.42	8.21	502.86	673.45	12294.84	1005.71	0.77	13.98	19.56
273	5.0	33.046	42.10	3780.81	9.48	276.98	359.16	7561.63	553.97	0.86	30.26	54.60
273	6.0	39.508	50.33	4487.08	9.44	328.72	427.81	8974.17	657.45	0.86	25.31	45.50
273	6.3	41.437	52.79	4695.82	9.43	344.02	448.20	9391.65	688.03	0.86	24.13	43.33
273	8.0	52.282	66.60	5851.71	9.37	428.70	561.97	11703.43	857.39	0.86	19.13	34.13
273	10.0	64.860	82.62	7154.09	9.31	524.11	692.02	14308.19	1048.22	0.86	15.42	27.30
273	12.0	77.240	98.39	8396.14	9.24	615.10	818.03	16792.28	1230.20	0.86	12.95	22.75
273	12.5	80.304	102.30	8697.45	9.22	637.18	848.90	17394.90	1274.35	0.86	12.45	21.84
323.9	5.0	39.323	50.09	6369.42	11.28	393.30	508.53	12738.85	786.59	1.02	25.43	64.78
323.9	6.0	47.039	59.92	7572.47	11.24	467.58	606.43	15144.93	935.16	1.02	21.26	53.98
323.9	6.3	49.345	62.86	7928.90	11.23	489.59	635.56	15857.79	979.18	1.02	20.27	51.41
323.9	8.0	62.325	79.39	9910.08	11.17	611.92	798.51	19820.16	1223.84	1.02	16.05	40.49
323.9	10.0	77.412	98.61	12158.34	11.10	750.75	985.67	24316.68	1501.49	1.02	12.92	32.39
323.9	12.0	92.303	117.58	14319.56	11.04	884.20	1167.96	28639.12	1768.39	1.02	10.83	26.99
323.9	12.5	95.995	122.29	14846.53	11.02	916.74	1212.78	29693.06	1833.47	1.02	10.42	25.91

Cold Formed Circular Hollow Sections



BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	As	L	B/T
mm	mm	Kg/m	cm^2	cm^4	cm	cm^3	cm^3	cm^4	cm^3	m^2/m	m	
355.6	5.0	43.232	55.07	8463.58	12.40	476.02	614.64	16927.15	952.03	1.12	23.13	71.12
355.6	6.0	51.730	65.90	10070.55	12.36	566.40	733.39	20141.11	1132.80	1.12	19.33	59.27
355.6	6.3	54.270	69.13	10547.21	12.35	593.21	768.75	21094.41	1186.41	1.12	18.43	56.44
355.6	8.0	68.579	87.36	13201.37	12.29	742.48	966.78	26402.75	1484.97	1.12	14.58	44.45
355.6	10.0	85.230	108.57	16223.50	12.22	912.46	1194.73	32447.00	1824.92	1.12	11.73	35.56
355.6	12.0	101.684	129.53	19139.47	12.16	1076.46	1417.31	38278.95	2152.92	1.12	9.83	29.63
355.6	12.5	105.767	134.74	19852.18	12.14	1116.55	1472.12	39704.35	2233.09	1.12	9.45	28.45
355.6	16.0	134.001	170.70	24663.00	12.02	1387.12	1846.62	49326.00	2774.24	1.12	7.46	22.23
406.4	6.0	59.247	75.47	15128.33	14.16	744.50	961.99	30256.65	1489.01	1.28	16.88	67.73
406.4	6.3	62.163	79.19	15849.43	14.15	779.99	1008.59	31698.87	1559.98	1.28	16.09	64.51
406.4	8.0	78.601	100.13	19873.89	14.09	978.05	1269.95	39747.79	1956.09	1.28	12.72	50.80
406.4	10.0	97.758	124.53	24475.81	14.02	1204.52	1571.66	48951.63	2409.04	1.28	10.23	40.64
406.4	12.0	116.718	148.69	28937.01	13.95	1424.07	1867.19	57874.03	2848.13	1.28	8.57	33.87
406.4	12.5	121.427	154.68	30030.67	13.93	1477.89	1940.12	60061.33	2955.77	1.28	8.24	32.51
406.4	16.0	154.046	196.24	37448.82	13.81	1842.95	2439.96	74897.64	3685.91	1.28	6.49	25.40
457	6.0	66.734	85.01	21618.10	15.95	946.09	1220.48	43236.21	1892.18	1.44	14.98	76.17
457	6.3	70.024	89.20	22654.16	15.94	991.43	1279.81	45308.32	1982.86	1.44	14.28	72.54
457	8.0	88.584	112.85	28446.36	15.88	1244.92	1612.98	56892.73	2489.83	1.44	11.29	57.13
457	10.0	110.237	140.43	35091.32	15.81	1535.73	1998.42	70182.65	3071.45	1.44	9.07	45.70
457	12.0	131.692	167.76	41556.30	15.74	1818.66	2376.88	83112.60	3637.31	1.44	7.59	38.08
457	12.5	137.025	174.55	43144.80	15.72	1888.18	2470.40	86289.61	3776.35	1.44	7.30	36.56
457	16.0	174.012	221.67	53959.38	15.60	2361.46	3113.06	107918.7	4722.92	1.44	5.75	28.56