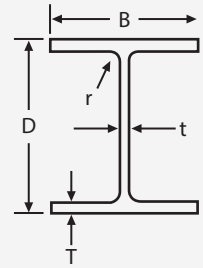




STEEL PRODUCTS CATALOGUE

KAH TECK HARDWARE TRADING PTE LTD

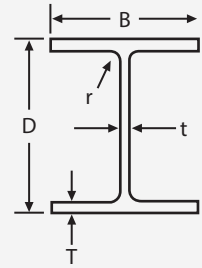
Universal Beams



(Metric units)

Section Size	Unit Weight	Section Depth	Flange Width	Thickness		Corner Radius	Section Area
				Web	Flange		
	M	D	B	t	T	r	A
mm	kg/m	mm	mm	mm	mm	mm	cm ²
100 x 50	9.30	100	50	5	7	8	11.85
100 x 100	16.90	100	100	6	8	8	21.60
	17.20	100	100	6	8	10	21.90
125 x 60	13.20	125	60	6	8	9	16.84
125 x 125	23.60	125	125	6.5	9	8	30.00
	23.80	125	125	6.5	9	10	30.31
150 x 75	14.00	150	75	5	7	8	17.85
150 x 100	20.70	148	100	6	9	8	26.30
	21.10	148	100	6	9	11	26.84
150 x 150	31.10	150	150	7	10	8	39.60
	31.50	150	150	7	10	11	40.14
	37.40	154	151	8	12	11	47.70
175 x 90	18.00	175	90	5	8	8	22.90
	18.10	175	90	5	8	9	23.04
175 x 125	23.30	169	125	5.5	8	12	29.65
175 x 175	32.80	171	174	6	9	12	41.70
	40.20	175	175	7.5	11	12	51.21
	40.40	175	175	7.5	11	13	51.40
200 x 100	17.80	198	99	4.5	7	8	22.70
	18.20	198	99	4.5	7	11	23.18
	20.90	200	100	5.5	8	8	26.70
	21.30	200	100	5.5	8	11	27.16
200 x 150	29.90	194	150	6	9	8	38.10
	30.60	194	150	6	9	13	39.01
	36.90	198	151	7	11	13	47.00
200 x 200	41.40	196	199	6.5	10	13	52.70
	49.90	200	200	8	12	13	63.53
	56.20	200	204	12	12	13	71.53
	57.80	204	201	9	14	13	73.60
	65.70	208	202	10	16	13	83.69
250 x 125	25.10	248	124	5	8	8	32.00
	25.70	248	124	5	8	12	32.68
	29.00	250	125	6	9	8	37.00
	29.60	250	125	6	9	12	37.66
250 x 175	43.60	244	175	7	11	13	55.50
	44.10	244	175	7	11	16	56.24
	51.60	248	176	8	13	16	65.70
	59.10	252	177	9	15	16	75.30
250 x 250	64.40	244	252	11	11	16	82.06
	66.50	248	249	8	13	16	84.70
	71.80	250	250	9	14	13	91.40
	72.40	250	250	9	14	16	92.18
	82.20	250	255	14	14	16	104.70
	98.10	260	253	12	19	16	125.00

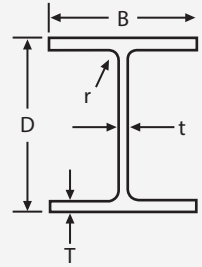
Universal Beams



(Metric units)

Section Size	Unit Weight	Section Depth	Flange Width	Thickness		Corner Radius	Section Area
				Web	Flange		
	M	D	B	t	T	r	A
mm	kg/m	mm	mm	mm	mm	mm	cm ²
300 x 150	25.00	294	148	4.5	6	16	32.60
	32.00	298	149	5.5	8	13	40.80
	36.70	300	150	6.5	9	13	46.78
	41.40	304	150	6.5	11	13	52.80
	46.20	306	151	7.5	12	13	58.80
	69.00	318	154	11	18	13	87.90
300 x 200	48.30	290	199	7	10	18	61.50
	55.80	294	200	8	12	13	71.10
	56.80	294	200	8	12	18	72.38
	65.40	298	201	9	14	18	83.36
	77.30	304	202	10	17	18	98.50
300 x 300	84.50	294	302	12	12	18	107.70
	87.00	298	299	9	14	18	110.80
	93.00	300	300	10	15	13	118.00
	94.00	300	300	10	15	18	119.80
	106.00	304	301	11	17	18	134.80
	125.00	310	303	13	20	18	159.00
	130.00	310	305	15	20	18	165.00
	147.00	312	310	20	21	18	187.00
350 x 175	41.20	346	174	6	9	13	52.50
	41.40	346	174	6	9	14	52.68
	49.40	350	175	7	11	13	62.90
	49.60	350	175	7	11	14	63.14
	57.80	354	176	8	13	14	73.70
	66.20	358	177	9	15	14	84.30
	71.80	360	178	10	16	14	91.40
	79.70	364	177	11	18	14	101.00
350 x 250	69.20	336	249	8	12	20	88.15
	78.10	340	250	9	14	13	100.00
	79.70	340	250	9	14	20	102.00
	94.20	346	251	10	17	20	120.00
	108.00	350	253	12	19	20	137.00
350 x 350	106.00	338	351	13	13	20	135.30
	113.00	344	348	10	16	13	144.00
	115.00	344	348	10	16	20	148.00
	131.00	344	354	16	16	20	166.60
	135.00	350	350	12	19	13	172.00
	137.00	350	350	12	19	20	173.90
	156.00	350	357	19	19	20	198.40
	159.00	356	352	14	22	20	202.00
	181.00	362	354	16	25	20	230.00

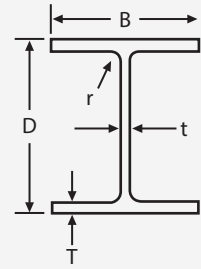
Universal Beams



(Metric units)

Section Size	Unit Weight	Section Depth	Flange Width	Thickness		Corner Radius	Section Area
				Web	Flange		
	M	D	B	t	T	r	A
mm	kg/m	mm	mm	mm	mm	mm	cm ²
400 x 200	56.10	396	199	7	11	13	71.40
	56.60	396	199	7	11	16	72.16
	65.40	400	200	8	13	13	83.40
	66.00	400	200	8	13	16	84.12
	75.50	404	201	9	15	16	96.20
	88.20	410	202	10	18	16	112.00
	140.00	430	208	16	28	16	179.00
	187.00	446	214	22	36	16	239.00
400 x 300	94.30	386	299	9	14	22	120.10
	105.00	390	300	10	16	13	133.00
	107.00	390	300	10	16	22	136.00
	127.00	396	302	12	19	22	162.00
	144.00	402	303	13	22	22	184.00
400 x 400	140.00	388	402	15	15	22	178.50
	147.00	394	398	11	18	22	186.80
	168.00	394	405	18	18	22	214.40
	172.00	400	400	13	21	22	218.70
	197.00	400	408	21	21	22	250.70
	200.00	406	403	16	24	22	254.90
	232.00	414	405	18	28	22	295.50
	283.00	428	407	20	35	22	360.70
	415.00	458	417	30	50	22	528.60
	605.00	498	432	45	70	22	770.10
450 x 200	65.10	446	199	8	12	13	83.00
	66.20	446	199	8	12	18	84.30
	74.90	450	200	9	14	13	95.40
	76.00	450	200	9	14	18	96.76
	88.90	456	201	10	17	18	113.00
	98.90	460	202	11	19	18	126.00
	110.00	460	205	14	19	18	140.00
450 x 300	106.00	434	299	10	15	24	135.00
	121.00	440	300	11	18	13	154.00
	124.00	440	300	11	18	24	157.40
	145.00	446	302	13	21	24	184.00
500 x 200	77.90	496	199	9	14	13	99.00
	79.50	496	199	9	14	20	101.30
	88.20	500	200	10	16	13	112.00
	89.60	500	200	10	16	20	114.20
	102.00	506	201	11	19	13	129.00
	103.00	506	201	11	19	20	131.30
	117.00	512	202	12	22	20	148.00
500 x 300	111.00	482	300	11	15	13	141.00
	114.00	482	300	11	15	26	145.50
	125.00	488	300	11	18	13	159.00
	128.00	488	300	11	18	26	163.50
	150.00	494	302	13	21	26	191.00

Universal Beams

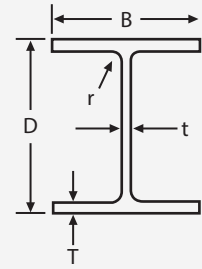


(Metric units)

Section Size	Unit Weight	Section Depth	Flange Width	Thickness		Corner Radius	Section Area
				Web	Flange		
	M	D	B	t	T	r	A
mm	kg/m	mm	mm	mm	mm	mm	cm ²
600 x 200	79.00	592	197	8	13	22	101.00
	92.50	596	199	10	15	13	118.00
	94.60	596	199	10	15	22	120.50
	103.00	600	200	11	17	13	132.00
	106.00	600	200	11	17	22	134.40
	118.00	606	201	12	20	13	150.00
	120.00	606	201	12	20	22	152.50
	134.00	612	202	13	23	22	171.00
600 x 300	133.00	582	300	12	17	13	169.00
	137.00	582	300	12	17	28	174.50
	147.00	588	300	12	20	13	187.00
	151.00	588	300	12	20	28	192.50
	170.00	594	302	14	23	13	217.00
	175.00	594	302	14	23	28	222.40
	203.00	602	304	16	27	28	259.00
	217.00	608	304	16	30	28	277.00
700 x 300	166.00	692	300	13	20	28	211.50
	182.00	700	300	13	24	18	232.00
	185.00	700	300	13	24	28	235.50
	215.00	708	302	14	28	28	273.60
800 x 300	191.00	792	300	14	22	28	243.40
	207.00	800	300	14	26	18	264.00
	210.00	800	300	14	26	28	267.40
	241.00	808	302	16	30	28	307.60
	267.00	816	303	17	34	28	340.00
900 x 300	210.00	890	299	15	23	18	267.00
	213.00	890	299	15	23	28	270.90
	240.00	900	300	16	28	18	306.00
	243.00	900	300	16	28	28	309.80
	283.00	912	302	18	34	18	360.00
	286.00	912	302	18	34	28	364.00
	304.00	918	303	19	37	18	387.00
	307.00	918	303	19	37	28	391.00

Material Spec : EN 10025 S275JR
 EN 10025 S355JR/J0/J2G3
 BS 4360 Gr 43A/50B
 JIS G3101 SS400

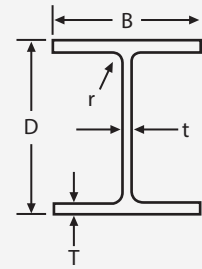
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W4 4 x 4 (102 x 102)	13.0 13.8 16.3	19.35 21.00 24.00	3.83 4.04 4.79	24.71 26.10 30.90	4.16 4.00 4.21	105.7 102.0 107.0	4.060 4.000 3.937	103.12 102.00 100.00	0.345 0.370 0.472	8.76 9.40 12.00	0.280 0.315 0.311	7.11 8.00 7.90	0.25 0.24 0.24	6.35 6 6
W5 5 x 3 (127 x 76)	9.0	13.00	2.60	16.80	5.00	127.0	3.000	76.20	0.299	7.59	0.165	4.19	0.25	6.35
W5 5 x 5 (127 x 127)	16.0 19.0	23.81 28.28	4.71 5.56	30.39 35.87	5.01 5.15	127.3 130.8	5.000 5.030	127.00 127.76	0.360 0.430	9.14 10.92	0.240 0.270	6.10 6.86	0.30 0.30	7.62 7.62
W6 6 x 3 (152 x 76)	9.0 12.0	14.00 18.00	2.76 3.35	17.80 21.60	5.90 6.10	150.0 155.0	2.953 2.953	75.00 75.00	0.276 0.335	7.00 8.50	0.197 0.236	5.00 6.00	0.31 0.31	8 8
W6 6 x 3½ (152 x 89)	11.0	16.00	3.18	20.50	6.00	152.4	3.500	88.90	0.303	7.70	0.181	4.60	0.25	6.35
W6 6 x 4 (152 x 102)	9.0 12.0 16.0	13.39 17.86 23.81	2.68 3.55 4.74	17.29 22.90 30.58	5.90 6.03 6.28	149.9 153.2 159.5	3.940 4.000 4.030	100.08 101.60 102.36	0.215 0.280 0.405	5.46 7.11 10.29	0.170 0.230 0.260	4.32 5.84 6.60	0.25 0.25 0.25	6.35 6.35 6.35
W6 6 x 6 (152 x 152)	15.0 15.7 20.0 25.0	22.50 23.00 30.00 37.20	4.43 4.62 5.87 7.34	28.58 29.80 37.87 47.35	5.99 6.00 6.20 6.38	152.1 152.4 157.5 162.1	5.990 6.000 6.020 6.080	152.15 152.40 152.91 154.43	0.260 0.269 0.365 0.455	6.60 6.83 9.27 11.56	0.230 0.240 0.260 0.320	5.84 6.10 6.60 8.13	0.25 0.25 0.25 0.25	6.35 6.35 6.35 6.35
W7 7 x 3½ (178 x 89)	11.0 12.0 15.0	16.10 18.10 22.20	3.16 3.57 4.37	20.40 23.00 28.20	6.81 6.89 7.05	173.0 175.0 179.0	3.543 3.543 3.543	90.00 90.00 90.00	0.276 0.315 0.394	7.00 8.00 10.00	0.177 0.197 0.236	4.50 5.00 6.00	0.35 0.35 0.35	8.9 8.9 8.9
W7 7 x 4 (178 x 102)	13.0	19.00	3.75	24.20	7.00	177.8	4.000	101.60	0.311	7.90	0.185	4.70	0.30	7.62
W8 8 x 4 (203 x 102)	10.0 13.0 15.0 15.5	14.88 19.35 22.32 23.00	2.96 3.84 4.44 4.50	19.10 24.77 28.65 29.00	7.89 7.99 8.11 8.00	200.4 202.9 206.0 203.2	3.940 4.000 4.015 4.000	100.08 101.60 101.98 101.60	0.205 0.255 0.315 0.368	5.21 6.48 8.00 9.35	0.170 0.230 0.245 0.205	4.32 5.84 6.22 5.21	0.30 0.30 0.30 0.30	7.62 7.62 7.62 7.62
W8 8 x 5¼ (203 x 133)	14.0 15.0 17.0 18.0 20.0 21.0	21.00 22.30 25.30 26.79 30.00 31.30	4.20 4.45 5.01 5.26 5.89 6.16	27.10 28.70 32.30 33.94 38.00 39.74	8.00 7.95 8.00 8.14 8.14 8.28	203.0 202.0 203.2 206.8 206.8 210.3	5.236 5.236 5.250 5.250 5.268 5.270	133.00 133.00 133.35 133.35 133.81 133.86	0.252 0.276 0.308 0.330 0.378 0.400	6.40 7.00 7.82 8.38 9.60 10.16	0.197 0.197 0.230 0.230 0.248 0.250	5.00 5.00 5.84 5.84 6.30 6.35	0.31 0.35 0.30 0.30 0.30 0.30	8 8.9 7.62 7.62 7.62 7.62
W8 8 x 6½ (203 x 165)	24.0 28.0	35.72 41.67	7.08 8.25	45.68 53.23	7.93 8.06	201.4 204.7	6.495 6.535	164.97 165.99	0.400 0.465	10.16 11.81	0.245 0.285	6.22 7.24	0.40 0.40	10.16 10.16
W8 8 x 8 (203 x 203)	31.0 35.0 40.0 48.0 58.0 67.0	46.13 52.09 60.00 71.43 86.31 100.00	9.12 10.30 11.70 14.10 17.10 19.70	58.84 66.45 75.48 90.97 110.30 127.10	8.00 8.12 8.25 8.50 8.75 9.00	203.2 206.2 209.6 215.9 222.3 228.6	7.995 8.020 8.070 8.110 8.220 8.280	203.07 203.71 204.98 205.99 208.79 210.31	0.435 0.495 0.560 0.685 0.810 0.935	11.05 12.57 14.22 17.40 20.57 23.75	0.285 0.310 0.360 0.400 0.510 0.570	7.24 7.87 9.14 10.16 12.95 14.48	0.40 0.40 0.40 0.40 0.40 0.40	10.16 10.16 10.16 10.16 10.16 10.16
W10 10 x 4 (254 x 102)	12.0 15.0 17.0 19.0	17.86 22.32 25.30 28.28	3.54 4.41 4.99 5.62	22.84 28.45 32.19 36.26	9.87 9.99 10.11 10.24	250.7 253.7 256.8 260.1	3.960 4.000 4.010 4.020	100.58 101.60 101.85 102.11	0.210 0.270 0.330 0.395	5.33 6.86 8.38 10.03	0.190 0.230 0.240 0.250	4.83 5.84 6.10 6.35	0.30 0.30 0.30 0.30	7.62 7.62 7.62 7.62
W10 10 x 5¼ (254 x 146)	16.0 21.0 22.0 25.0 26.0 29.0 30.0	24.00 31.25 32.74 37.20 38.69 43.00 44.80	4.82 6.20 6.49 7.36 7.61 8.54 8.85	31.10 40.00 41.87 47.50 49.10 55.10 57.10	9.96 9.90 10.17 10.08 10.33 10.22 10.47	253.0 251.5 258.3 256.0 262.4 259.6 265.9	5.708 5.750 5.750 5.762 5.770 5.799 5.819	145.00 146.05 146.05 146.35 146.56 147.29 147.80	0.252 0.340 0.360 0.430 0.440 0.500 0.510	6.40 8.64 9.14 10.92 11.18 12.70 12.95	0.197 0.240 0.240 0.252 0.260 0.289 0.300	5.00 6.10 6.10 6.40 6.60 7.34 7.62	0.30 0.30 0.30 0.30 0.30 0.30 0.30	7.62 7.62 7.62 7.62 7.62 7.62 7.62

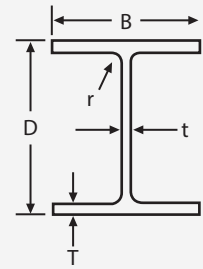
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W10 10 x 8 (254 x 203)	33.00	49.11	9.71	62.64	9.73	247.14	7.96	202.18	0.44	11.05	0.29	7.37	0.50	12.70
	39.00	58.04	11.50	74.19	9.92	251.97	7.99	202.82	0.53	13.46	0.32	8.00	0.50	12.70
	42.00	62.50	12.29	79.30	9.82	249.40	8.15	207.00	0.48	12.20	0.48	12.20	0.50	12.70
	45.00	66.97	13.30	85.81	10.10	256.54	8.02	203.71	0.62	15.75	0.35	8.89	0.50	12.70
	57.00	84.80	16.74	108.00	10.16	258.10	8.32	211.30	0.65	16.50	0.65	16.50	0.50	12.70
W10 10 x 10 (254 x 254)	49.00	73.00	14.40	92.90	9.98	253.49	10.00	254.00	0.56	14.22	0.34	8.64	0.50	12.70
	54.00	80.36	15.80	101.90	10.09	256.29	10.03	254.76	0.62	15.62	0.37	9.40	0.50	12.70
	60.00	89.29	17.60	113.50	10.22	259.59	10.08	256.03	0.68	17.27	0.42	10.67	0.50	12.70
	68.00	101.20	20.00	129.00	10.40	264.16	10.13	257.30	0.77	19.56	0.47	11.94	0.50	12.70
	72.00	107.00	21.20	136.60	10.50	266.70	10.17	258.32	0.81	20.52	0.51	12.95	0.50	12.70
	77.00	115.00	22.60	145.80	10.60	269.24	10.19	258.83	0.87	22.10	0.53	13.46	0.50	12.70
	88.00	131.00	25.90	167.10	10.84	275.34	10.27	260.73	0.99	25.15	0.61	15.37	0.50	12.70
	89.00	132.00	26.20	168.90	10.88	276.35	10.28	260.99	1.00	25.35	0.62	15.62	0.50	12.70
	100.00	149.00	29.40	189.70	11.11	282.19	10.34	262.64	1.12	28.45	0.68	17.27	0.50	12.70
	112.00	167.00	32.90	212.30	11.36	288.54	10.42	264.54	1.25	31.75	0.76	19.18	0.50	12.70
W12 12 x 4 (305 x 102)	14.00	20.83	4.16	26.84	11.91	302.51	3.97	100.84	0.23	5.72	0.20	5.08	0.30	7.62
	16.00	23.81	4.71	30.39	11.99	304.55	3.99	101.35	0.27	6.73	0.22	5.59	0.30	7.62
	16.50	25.00	4.87	31.40	12.00	304.80	4.00	101.60	0.27	6.83	0.23	5.84	0.30	7.62
	19.00	28.28	5.57	35.94	12.16	308.86	4.01	101.73	0.35	8.89	0.24	5.97	0.30	7.62
	22.00	33.00	6.48	41.81	12.31	312.67	4.03	102.36	0.43	10.80	0.26	6.60	0.30	7.62
W12 12 x 5 (305 x 127)	25.00	37.00	7.36	47.50	11.96	303.78	4.86	123.55	0.42	10.69	0.28	7.21	0.30	8.90
	28.00	42.00	8.25	53.20	12.07	306.58	4.89	124.28	0.48	12.09	0.31	7.95	0.30	8.90
	32.00	48.00	9.42	60.80	12.22	310.39	4.93	125.22	0.55	14.00	0.35	8.89	0.30	8.90
W12 12 x 6½ (305 x 165)	21.00	31.00	6.11	39.40	12.05	306.00	6.46	164.00	0.29	7.40	0.20	5.00	0.30	7.62
	26.00	38.70	7.65	49.35	12.22	310.39	6.49	164.85	0.38	9.65	0.23	5.84	0.30	7.62
	27.00	40.00	7.98	51.50	11.96	303.78	6.50	165.10	0.40	10.16	0.24	6.10	0.30	8.90
	30.00	44.64	8.79	56.71	12.34	313.44	6.52	165.61	0.44	11.18	0.26	6.60	0.30	7.62
	31.00	46.00	9.13	58.90	12.09	307.09	6.53	165.74	0.47	11.81	0.27	6.73	0.30	8.90
	35.00	52.09	10.30	66.45	12.50	317.50	6.56	166.62	0.52	13.21	0.30	7.62	0.30	7.62
	36.00	54.00	10.60	68.40	12.24	310.90	6.57	166.75	0.54	13.72	0.31	7.75	0.30	8.90
W12 12 x 8 (305 x 203)	40.00	59.53	11.80	76.13	11.94	303.28	8.01	203.33	0.52	13.08	0.30	7.49	0.60	15.24
	45.00	66.97	13.20	85.16	12.06	306.32	8.05	204.34	0.58	14.61	0.34	8.51	0.60	15.24
	50.00	74.41	14.70	94.84	12.19	309.63	8.08	205.23	0.64	16.26	0.37	9.40	0.60	15.24
W12 12 x 10 (305 x 254)	53.00	78.87	15.60	100.60	12.06	306.32	10.00	253.87	0.58	14.61	0.35	8.76	0.60	15.24
	58.00	86.31	17.00	109.70	12.19	309.63	10.01	254.25	0.64	16.26	0.36	9.14	0.60	15.24
W12 12 x 12 (305 x 305)	65.00	97.00	19.10	123.20	12.12	307.85	12.00	304.80	0.61	15.37	0.39	9.91	0.60	15.24
	72.00	107.10	21.10	136.10	12.25	311.15	12.04	305.82	0.67	17.02	0.43	10.92	0.60	15.24
	79.00	118.00	23.20	149.70	12.38	314.45	12.08	306.83	0.74	18.67	0.47	11.94	0.60	15.24
	87.00	129.50	25.60	165.20	12.53	318.26	12.13	307.98	0.81	20.57	0.52	13.08	0.60	15.24
	92.00	137.00	27.10	174.60	12.62	320.55	12.16	308.74	0.86	21.74	0.55	13.84	0.60	15.24
	96.00	143.00	28.20	182.00	12.71	322.83	12.16	308.86	0.90	22.86	0.55	13.97	0.60	15.24
	106.00	158.00	31.20	201.30	12.89	327.41	12.22	310.39	0.99	25.15	0.61	15.49	0.60	15.24
	120.00	179.00	35.30	227.70	13.12	333.25	12.32	312.93	1.10	27.94	0.71	18.03	0.60	15.24
	133.00	198.00	39.10	252.30	13.38	339.85	12.37	314.07	1.24	31.39	0.76	19.18	0.60	15.24
	136.00	202.40	39.90	257.40	13.41	340.61	12.40	314.96	1.25	31.75	0.79	20.07	0.60	15.24
	152.00	226.20	44.70	288.40	13.71	348.23	12.48	316.99	1.40	35.56	0.87	22.10	0.60	15.24
	161.00	240.00	47.40	305.60	13.88	352.55	12.52	317.88	1.49	37.74	0.91	22.99	0.60	15.24
	170.00	253.00	50.00	322.60	14.03	356.36	12.57	319.28	1.56	39.62	0.96	24.38	0.60	15.24
	190.00	283.00	55.80	360.00	14.38	365.25	12.67	321.82	1.74	44.07	1.06	26.92	0.60	15.24
	210.00	312.50	61.80	398.70	14.71	373.63	12.79	324.87	1.90	48.26	1.18	29.97	0.60	15.24
	230.00	342.30	67.70	436.80	15.05	382.27	12.90	327.53	2.07	52.58	1.29	32.64	0.60	15.24
	252.00	375.00	74.00	477.40	15.41	391.41	13.01	330.33	2.25	57.15	1.40	35.43	0.60	15.24
	278.00	413.70	81.90	528.40	15.85	402.59	13.14	333.76	2.47	62.74	1.53	38.86	0.60	15.24
	279.00	415.00	81.84	528.00	15.85	402.60	13.14	333.76	2.47	62.74	1.53	38.86	0.60	15.24
	305.00	453.90	89.60	578.10	16.32	414.53	13.24	336.17	2.71	68.71	1.63	41.28	0.60	15.24
	336.00	500.00	98.80	637.40	16.82	427.23	13.39	339.98	2.96	75.06	1.78	45.09	0.60	15.24

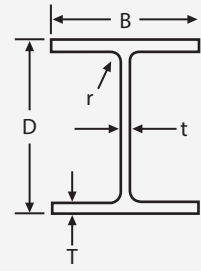
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W14 14 x 5 (356 x 127)	22.00	33.00	6.49	41.87	13.74	349.00	5.00	127.00	0.34	8.51	0.23	5.84	0.40	10.16
	26.00	39.00	7.69	49.61	13.91	353.31	5.03	127.64	0.42	10.67	0.26	6.48	0.40	10.16
W14 14 x 6 ³ / ₄ (356 x 171)	30.00	45.00	8.85	57.10	13.84	351.54	6.73	170.94	0.39	9.78	0.27	6.86	0.40	10.16
	34.00	51.00	10.00	64.52	13.98	355.09	6.75	171.32	0.46	11.56	0.29	7.24	0.40	10.16
	38.00	57.00	11.20	72.26	14.10	358.14	6.77	171.96	0.52	13.08	0.31	7.87	0.40	10.16
	45.00	67.00	13.20	85.40	14.33	363.98	6.82	173.23	0.62	15.70	0.36	9.07	0.40	10.16
W14 14 x 8 (356 x 203)	43.00	63.99	12.60	81.29	13.66	346.96	8.00	203.07	0.53	13.46	0.31	7.75	0.60	15.24
	48.00	71.43	14.10	90.97	13.79	350.27	8.03	203.96	0.60	15.11	0.34	8.64	0.60	15.24
	53.00	78.87	15.60	100.60	13.92	353.57	8.06	204.72	0.66	16.76	0.37	9.40	0.60	15.24
W14 14 x 10 (356 x 254)	61.00	90.78	17.90	115.50	13.89	352.81	10.00	253.87	0.65	16.38	0.38	9.53	0.60	15.24
	68.00	101.20	20.00	129.00	14.04	356.62	10.04	254.89	0.72	18.36	0.42	10.54	0.60	15.24
	74.00	110.10	21.80	140.60	14.17	359.92	10.07	255.78	0.79	19.94	0.45	11.43	0.60	15.24
	82.00	122.00	24.10	155.50	14.31	363.47	10.13	257.30	0.86	21.72	0.51	12.95	0.60	15.24
W14 14 x 14 ¹ / ₂ (356 x 368)	87.00	129.00	25.60	164.90	14.00	355.60	14.50	368.30	0.69	17.48	0.42	10.67	0.60	15.24
	90.00	134.00	26.50	171.00	14.02	356.11	14.52	368.81	0.71	18.03	0.44	11.18	0.60	15.24
	99.00	147.30	29.10	187.70	14.16	359.66	14.57	369.95	0.78	19.81	0.49	12.32	0.60	15.24
	103.00	153.00	30.30	195.20	14.25	361.95	14.58	370.21	0.81	20.65	0.50	12.57	0.60	15.24
	109.00	162.20	32.00	206.50	14.32	363.73	14.61	370.97	0.86	21.84	0.53	13.34	0.60	15.24
	119.00	177.00	35.00	225.70	14.50	368.30	14.65	372.11	0.94	23.83	0.57	14.48	0.60	15.24
	120.00	179.00	35.30	227.70	14.48	367.79	14.67	372.62	0.94	23.88	0.59	14.99	0.60	15.24
	132.00	196.40	38.80	250.30	14.66	372.36	14.73	374.02	1.03	26.16	0.65	16.38	0.60	15.24
	136.00	202.00	40.00	257.90	14.75	374.65	14.74	374.40	1.06	27.00	0.66	16.76	0.60	15.24
W14 14 x 16 (356 x 406)	118.00	175.60	44.95	224.00	14.17	360.00	15.59	396.00	0.79	20.00	0.79	20.00	0.59	15.00
	145.00	216.00	42.70	275.50	14.78	375.41	15.50	393.70	1.09	27.69	0.68	17.27	0.60	15.24
	158.00	235.00	46.50	299.80	15.00	381.00	15.55	394.97	1.19	30.18	0.73	18.54	0.60	15.24
	159.00	237.00	46.70	301.30	14.98	380.49	15.57	395.35	1.19	30.23	0.75	18.92	0.60	15.24
	176.00	262.00	51.80	334.20	15.22	386.59	15.65	397.51	1.31	33.27	0.83	21.08	0.60	15.24
	193.00	287.20	56.80	366.40	15.48	393.19	15.71	399.03	1.44	36.58	0.89	22.61	0.60	15.24
	211.00	314.00	62.00	400.00	15.72	399.29	15.80	401.32	1.56	39.62	0.98	24.89	0.60	15.24
	219.00	326.00	64.33	415.00	15.87	403.10	15.83	402.00	1.62	41.20	1.00	25.50	0.60	15.24
	228.00	340.00	67.10	432.70	16.00	406.40	15.87	402.97	1.69	42.88	1.05	26.54	0.60	15.24
	233.00	347.00	68.50	441.90	16.04	407.42	15.89	403.61	1.72	43.69	1.07	27.18	0.60	15.24
	257.00	382.50	75.60	487.70	16.38	416.05	16.00	406.27	1.89	48.01	1.18	29.85	0.60	15.24
	264.00	393.00	77.60	500.90	16.50	419.10	16.03	407.04	1.94	49.23	1.21	30.61	0.60	15.24
	283.00	421.10	83.30	537.40	16.74	425.20	16.11	409.19	2.07	52.58	1.29	32.77	0.60	15.24
	311.00	463.00	91.40	598.70	17.12	434.85	16.23	412.24	2.26	57.40	1.41	35.81	0.60	15.24
	314.00	467.00	92.30	595.50	17.19	436.63	16.24	412.37	2.28	57.99	1.42	35.94	0.60	15.24
	342.00	509.00	101.00	651.60	17.54	445.52	16.36	415.54	2.47	62.74	1.54	39.12	0.60	15.24
	370.00	551.00	109.00	703.20	17.92	455.17	16.48	418.47	2.66	67.56	1.66	42.04	0.60	15.24
	398.00	592.30	117.00	754.80	18.29	464.57	16.59	421.39	2.85	72.26	1.77	44.96	0.60	15.24
	426.00	634.00	125.00	806.40	18.67	474.22	16.70	424.05	3.04	77.09	1.88	47.63	0.60	15.24
	455.00	677.10	134.00	864.50	19.02	483.11	16.84	427.61	3.21	81.53	2.02	51.18	0.60	15.24
	500.00	744.10	147.00	948.40	19.60	497.84	17.01	432.05	3.50	88.90	2.19	55.63	0.60	15.24
	550.00	818.50	162.00	1,045.00	20.24	514.10	17.20	436.88	3.82	97.03	2.38	60.45	0.60	15.24
	605.00	900.30	178.00	1,148.00	20.92	531.37	17.42	442.34	4.16	105.66	2.60	65.91	0.60	15.24
	665.00	989.60	196.00	1,265.00	21.64	549.66	17.65	448.31	4.52	114.81	2.83	71.88	0.60	15.24
	730.00	1,086.00	215.00	1,387.00	22.42	569.47	17.89	454.41	4.91	124.71	3.07	77.98	0.60	15.24
W16 16 x 5 ¹ / ₂ (406 x 140)	26.00	39.00	7.68	49.55	15.69	398.53	5.50	139.70	0.35	8.76	0.25	6.35	0.40	10.16
	31.00	46.13	9.12	58.84	15.88	403.35	5.53	140.34	0.44	11.18	0.28	6.99	0.40	10.16
W16 16 x 7 (406 x 178)	36.00	54.00	10.60	68.39	15.86	402.84	6.99	177.42	0.43	10.92	0.30	7.49	0.40	10.16
	40.00	60.00	11.80	76.13	16.01	406.65	7.00	177.67	0.51	12.83	0.31	7.75	0.40	10.16
	45.00	67.00	13.30	85.81	16.13	409.70	7.04	178.69	0.57	14.35	0.35	8.76	0.40	10.16
	50.00	74.41	14.70	94.84	16.26	413.00	7.07	179.58	0.63	16.00	0.38	9.65	0.40	10.16
	57.00	85.00	16.80	108.40	16.43	417.32	7.12	180.85	0.72	18.16	0.43	10.92	0.40	10.16

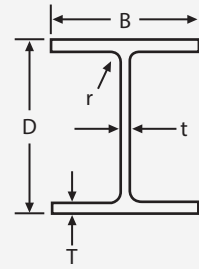
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W16 16 x 10 ¹ / ₄ (406 x 260)	67.00	99.71	19.70	127.10	16.33	414.78	10.24	259.97	0.67	16.89	0.40	10.03	0.40	10.16
	77.00	114.60	22.60	145.80	16.52	419.61	10.30	261.49	0.76	19.30	0.46	11.56	0.40	10.16
	89.00	132.40	26.20	169.00	16.75	425.45	10.37	263.27	0.88	22.23	0.53	13.34	0.40	10.16
	100.00	148.80	29.40	189.70	16.97	431.04	10.43	264.80	0.99	25.02	0.59	14.86	0.40	10.16
W18 18 x 6 (457 x 152)	35.00	52.09	10.30	66.45	17.70	449.58	6.00	152.40	0.43	10.80	0.30	7.62	0.40	10.16
	40.00	60.00	11.80	76.13	17.90	454.66	6.02	152.78	0.53	13.34	0.32	8.00	0.40	10.16
	45.00	67.00	13.20	85.40	18.00	457.20	5.98	151.94	0.59	14.96	0.36	9.14	0.40	10.16
	46.00	68.46	13.50	87.10	18.06	458.72	6.06	153.92	0.61	15.37	0.36	9.14	0.40	10.16
	50.00	74.00	14.70	95.00	18.16	461.26	6.01	152.68	0.67	16.99	0.39	9.88	0.40	10.16
W18 18 x 7 ¹ / ₂ (457 x 191)	55.00	82.00	16.20	104.50	18.31	465.07	6.04	153.47	0.74	18.90	0.42	10.67	0.40	10.16
	41.00	61.00	11.78	76.00	17.72	450.00	7.44	189.00	0.43	10.80	0.32	8.10	0.40	10.16
	45.00	67.00	13.20	85.40	17.86	453.64	7.48	189.89	0.50	12.70	0.33	8.48	0.40	10.16
	50.00	74.41	14.70	94.84	17.99	456.95	7.50	190.37	0.57	14.48	0.36	9.02	0.40	10.16
	55.00	82.00	16.20	104.50	18.11	459.99	7.53	191.26	0.63	16.00	0.39	9.91	0.40	10.16
	60.00	89.29	17.60	113.50	18.24	463.30	7.56	191.90	0.70	17.65	0.42	10.54	0.40	10.16
	65.00	97.00	19.10	123.20	18.35	466.09	7.59	192.79	0.75	19.05	0.45	11.43	0.40	10.16
	66.00	98.00	19.40	125.30	18.40	467.36	7.59	192.84	0.77	19.56	0.45	11.43	0.40	10.16
W18 18 x 11 (457 x 279)	71.00	106.00	20.80	134.20	18.47	469.14	7.64	193.93	0.81	20.57	0.50	12.57	0.40	10.16
	76.00	113.10	22.30	143.90	18.21	462.53	11.04	280.29	0.68	17.27	0.43	10.80	0.40	10.16
	86.00	128.00	25.30	163.20	18.39	467.11	11.09	281.69	0.77	19.56	0.48	12.19	0.40	10.16
	97.00	144.40	28.50	183.90	18.59	472.19	11.15	283.08	0.87	22.10	0.54	13.59	0.40	10.16
	106.00	157.70	31.10	200.60	18.73	475.74	11.20	284.48	0.94	23.88	0.59	14.99	0.40	10.16
	119.00	177.10	35.10	226.50	18.97	481.84	11.27	286.13	1.06	26.92	0.66	16.64	0.40	10.16
	130.00	193.50	38.29	247.00	19.25	489.00	11.16	283.50	1.20	30.50	0.67	17.00	0.40	10.16
	143.00	212.80	42.00	271.00	19.49	495.00	11.22	285.00	1.32	33.50	0.73	18.50	0.40	10.16
W21 21 x 6 ¹ / ₂ (533 x 165)	158.00	235.00	46.35	299.00	19.72	501.00	11.30	287.00	1.44	36.60	0.81	20.60	0.40	10.16
	175.00	260.00	51.30	331.00	20.04	509.00	11.38	289.00	1.59	40.40	0.89	22.60	0.40	10.16
	44.00	66.00	13.00	83.87	20.66	524.76	6.50	165.10	0.45	11.43	0.35	8.89	0.50	12.70
	50.00	74.41	14.70	94.84	20.83	529.08	6.53	165.86	0.54	13.59	0.38	9.65	0.50	12.70
	57.00	85.00	16.70	107.70	21.06	534.92	6.56	166.50	0.65	16.51	0.41	10.29	0.50	12.70
	48.00	71.40	14.11	91.00	20.60	523.20	8.14	206.80	0.43	10.90	0.35	8.90	0.50	12.70
	55.00	82.00	16.20	104.40	20.80	528.32	8.22	208.69	0.52	13.21	0.38	9.55	0.50	12.70
	62.00	92.27	18.30	118.10	20.99	533.15	8.24	209.30	0.62	15.62	0.40	10.16	0.50	12.70
W21 21 x 8 ¹ / ₄ (533 x 210)	68.00	101.20	20.00	129.00	21.13	536.70	8.27	210.06	0.69	17.40	0.43	10.92	0.50	12.70
	73.00	109.00	21.50	138.70	21.24	539.50	8.30	210.69	0.74	18.80	0.46	11.56	0.50	12.70
	82.00	122.00	24.10	155.80	21.44	544.58	8.34	211.89	0.84	21.34	0.50	12.75	0.50	12.70
	83.00	123.50	24.30	156.80	21.43	544.32	8.36	212.22	0.84	21.21	0.52	13.08	0.50	12.70
	93.00	138.40	27.30	176.10	21.62	549.15	8.42	213.87	0.93	23.62	0.58	14.73	0.50	12.70
	101.00	150.30	29.80	192.30	21.36	542.54	12.29	312.17	0.80	20.32	0.50	12.70	0.50	12.70
	111.00	165.20	32.70	211.00	21.51	546.35	12.34	313.44	0.88	22.23	0.55	13.97	0.50	12.70
	122.00	181.60	35.90	231.60	21.68	550.67	12.39	314.71	0.96	24.38	0.60	15.24	0.50	12.70
W21 21 x 12 ¹ / ₄ (533 x 311)	132.00	196.40	38.80	250.30	21.83	554.48	12.44	315.98	1.03	26.16	0.65	16.51	0.50	12.70
	147.00	218.80	43.20	278.70	22.06	560.32	12.51	317.75	1.15	29.21	0.72	18.29	0.50	12.70
	166.00	247.00	48.83	315.00	22.48	571.00	12.42	315.50	1.36	34.50	0.75	19.10	0.50	12.70
	182.00	270.80	53.63	346.00	22.72	577.10	12.51	317.80	1.48	37.60	0.83	21.10	0.50	12.70
	201.00	300.00	59.21	382.00	23.03	585.00	12.56	319.00	1.63	41.40	0.91	23.10	0.50	12.70
	223.00	331.00	65.41	422.00	23.35	593.00	12.68	322.00	1.79	45.50	1.00	25.40	0.50	12.70
	248.00	370.00	71.30	460.00	23.74	603.00	12.76	324.00	1.99	50.50	1.03	26.20	0.50	12.70
	275.00	409.00	80.76	521.00	24.13	613.00	12.87	327.00	2.19	55.60	1.22	31.00	0.50	12.70
W24 24 x 7 (610 x 178)	55.00	82.00	16.20	104.50	23.57	598.68	7.01	177.93	0.51	12.83	0.40	10.03	0.50	12.70
	61.00	91.00	17.90	116.50	23.72	602.49	7.02	178.38	0.59	15.01	0.42	10.64	0.50	12.70
	62.00	92.27	18.20	117.40	23.74	603.00	7.04	178.82	0.59	14.99	0.43	10.92	0.50	12.70

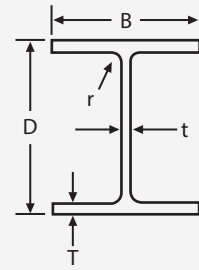
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W24 24 x 9 (610 x 229)	68.00	101.20	20.10	129.70	23.73	602.74	8.97	227.71	0.59	14.86	0.42	10.54	0.50	12.70
	76.00	113.10	22.40	144.50	23.92	607.57	8.99	228.35	0.68	17.27	0.44	11.18	0.50	12.70
	84.00	125.00	24.70	159.40	24.10	612.14	9.02	229.11	0.77	19.56	0.47	11.94	0.50	12.70
	94.00	140.00	27.70	178.70	24.31	617.47	9.07	230.25	0.88	22.23	0.52	13.08	0.50	12.70
	103.00	153.00	30.23	195.00	24.53	623.10	9.00	228.60	0.98	24.90	0.55	14.00	0.50	12.70
	114.00	171.00	33.79	218.00	24.76	628.90	9.05	229.90	1.10	27.90	0.61	15.50	0.50	12.70
	128.00	191.00	37.51	242.00	25.00	635.00	9.11	231.50	1.22	30.90	0.67	17.00	0.50	12.70
	146.00	217.00	43.09	278.00	25.32	643.10	9.22	234.10	1.38	35.10	0.77	19.60	0.50	12.70
	163.00	243.00	48.05	310.00	25.63	651.00	9.29	235.90	1.54	39.10	0.85	21.60	0.50	12.70
	181.00	270.00	53.17	343.00	25.94	658.86	9.39	238.50	1.69	42.90	0.94	23.90	0.50	12.70
	198.00	295.00	58.28	376.00	26.26	667.00	9.47	240.50	1.85	47.00	1.02	25.90	0.50	12.70
	218.00	325.00	63.86	412.00	26.58	675.10	9.57	243.10	2.01	51.00	1.12	28.40	0.50	12.70
	239.00	356.00	70.37	454.00	26.97	685.00	9.67	245.60	2.20	55.90	1.22	31.00	0.50	12.70
W24 24 x 12 (610 x 305)	100.00	149.00	29.40	190.10	24.00	609.60	12.00	304.80	0.78	19.69	0.47	11.89	0.70	16.50
	120.00	179.00	35.30	227.90	24.31	617.47	12.09	307.04	0.93	23.62	0.56	14.12	0.70	16.50
	160.00	238.00	47.00	303.80	24.92	632.97	12.26	311.51	1.24	31.37	0.73	18.59	0.70	16.50
W24 24 x 12 ³ / ₄ (610 x 324)	104.00	154.80	30.60	197.40	24.06	611.12	12.75	323.85	0.75	19.05	0.50	12.70	0.50	12.70
	117.00	174.10	34.40	221.90	24.26	616.20	12.80	325.12	0.85	21.59	0.55	13.97	0.50	12.70
	131.00	194.90	38.50	248.40	24.48	621.79	12.86	326.52	0.96	24.38	0.61	15.37	0.50	12.70
	146.00	217.30	43.00	277.40	24.74	628.40	12.90	327.66	1.09	27.69	0.65	16.51	0.50	12.70
	162.00	241.10	47.70	307.70	25.00	635.00	12.96	329.06	1.22	30.99	0.71	17.91	0.50	12.70
	176.00	261.90	51.62	333.00	25.24	641.10	12.89	327.40	1.34	34.00	0.75	19.10	0.50	12.70
	192.00	285.70	56.27	363.00	25.47	646.90	12.95	328.90	1.46	37.10	0.81	20.60	0.50	12.70
	207.00	308.00	60.76	392.00	25.71	653.00	13.01	330.50	1.57	39.90	0.87	22.10	0.50	12.70
	229.00	341.00	67.43	435.00	26.02	661.00	13.11	333.00	1.73	43.90	0.96	24.40	0.65	16.50
	250.00	372.00	73.63	475.00	26.34	669.00	13.19	335.00	1.89	48.00	1.04	26.40	0.65	16.50
	279.00	415.00	82.15	530.00	26.73	679.00	13.31	338.00	2.09	53.10	1.16	29.50	0.65	16.50
	306.00	455.00	89.75	579.00	27.13	689.00	13.39	340.00	2.28	57.90	1.26	32.00	0.65	16.50
	335.00	498.00	98.43	635.00	27.52	699.00	13.50	343.00	2.48	63.00	1.38	35.10	0.51	13.00
	370.00	551.00	108.81	702.00	27.99	711.00	13.66	347.00	2.72	69.10	1.52	38.60	0.51	13.00
W27 27 x 10 (686 x 254)	84.00	125.00	24.80	160.00	26.71	678.43	9.96	252.98	0.64	16.26	0.46	11.68	0.60	15.24
	94.00	140.00	27.70	178.70	26.92	683.77	9.99	253.75	0.75	18.92	0.49	12.45	0.60	15.24
	102.00	152.00	30.00	193.50	27.07	687.55	10.02	254.38	0.83	21.08	0.52	13.08	0.60	15.24
	114.00	170.00	33.50	216.10	27.29	693.17	10.07	255.78	0.93	23.62	0.57	14.48	0.60	15.24
	129.00	192.00	37.82	244.00	27.63	701.80	10.01	254.30	1.10	27.90	0.61	15.50	0.60	15.24
	143.00	213.00	41.85	270.00	27.87	707.90	10.07	255.80	1.22	31.00	0.67	17.00	0.60	15.24
	159.00	237.00	46.66	301.00	28.11	714.00	10.15	257.80	1.34	34.00	0.75	19.10	0.60	15.24
	182.00	271.00	53.48	345.00	28.50	723.90	10.24	260.20	1.54	39.10	0.85	21.60	0.60	15.24
	201.00	299.00	59.21	382.00	28.82	732.00	10.35	262.80	1.69	42.90	0.94	23.90	0.60	15.24
	221.00	329.00	64.79	418.00	29.13	739.90	10.43	264.80	1.85	47.00	1.02	25.90	0.60	15.24
	247.00	368.00	72.54	468.00	29.52	749.80	10.54	267.70	2.05	52.10	1.14	28.90	0.60	15.24
	271.00	404.00	79.52	513.00	29.92	760.00	10.64	270.30	2.24	56.90	1.24	31.50	0.60	15.24
	302.00	449.00	88.97	574.00	30.39	771.90	10.78	273.80	2.48	63.00	1.38	35.10	0.60	15.24
W27 27 x 14 (686 x 356)	146.00	217.30	42.90	276.80	27.38	695.45	13.97	354.71	0.98	24.77	0.61	15.37	0.60	15.24
	161.00	239.60	47.40	305.80	27.59	700.79	14.02	356.11	1.08	27.43	0.66	16.76	0.60	15.24
	178.00	264.90	52.30	337.40	27.81	706.37	14.09	357.76	1.19	30.23	0.73	18.42	0.60	15.24
	194.00	288.70	57.04	368.00	28.11	714.00	14.03	356.40	1.34	34.00	0.75	19.10	0.60	15.24
	217.00	322.90	63.71	411.00	28.43	722.10	14.11	358.50	1.50	38.10	0.83	21.10	0.60	15.24
	235.00	349.70	69.13	446.00	28.66	728.00	14.19	360.40	1.61	40.90	0.91	23.10	0.60	15.24
	258.00	383.90	75.80	489.00	28.98	736.10	14.27	362.50	1.77	45.00	0.98	24.90	0.60	15.24
	281.00	418.20	82.62	533.00	29.29	744.00	14.35	364.50	1.93	49.00	1.06	26.90	0.60	15.24
	307.00	456.90	90.21	582.00	29.61	752.10	14.44	366.90	2.09	53.10	1.16	29.50	0.60	15.24
	336.00	500.00	98.58	636.00	30.00	762.00	14.53	369.00	2.28	57.90	1.26	32.00	0.60	15.24

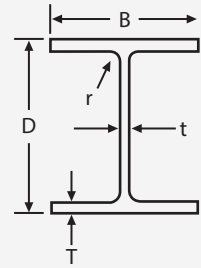
Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W30 30 x 10½ (762 x 267)	90.00	133.90	26.51	171.00	29.53	750.00	10.41	264.40	0.61	15.50	0.47	12.00	0.65	16.51
	99.00	147.30	29.10	187.70	29.65	753.11	10.45	265.43	0.67	17.02	0.52	13.21	0.65	16.51
	108.00	161.00	31.70	204.50	29.83	757.68	10.48	266.07	0.76	19.30	0.55	13.84	0.65	16.51
	116.00	173.00	34.20	220.60	30.01	762.25	10.50	266.57	0.85	21.59	0.57	14.35	0.65	16.51
	124.00	185.00	36.50	235.50	30.17	766.32	10.52	267.08	0.93	23.62	0.59	14.86	0.65	16.51
	132.00	197.00	38.90	251.00	30.31	769.87	10.55	267.84	1.00	25.40	0.62	15.62	0.65	16.51
	148.00	220.00	43.56	281.00	30.67	779.00	10.48	266.20	1.18	30.00	0.65	16.50	0.65	16.51
	165.00	246.00	48.36	312.00	30.91	785.10	10.56	268.10	1.30	33.00	0.73	18.50	0.65	16.51
	185.00	275.00	54.41	351.00	31.22	793.00	10.63	270.10	1.46	37.10	0.81	20.60	0.65	16.51
	207.00	308.00	60.76	392.00	31.54	801.10	10.74	272.70	1.61	40.90	0.91	23.10	0.65	16.51
	226.00	337.00	66.34	428.00	31.85	809.00	10.81	274.60	1.77	44.90	0.98	24.90	0.65	16.51
	246.00	366.00	71.61	462.00	32.17	817.10	10.89	276.60	1.89	48.00	1.06	26.90	0.65	16.51
	269.00	401.00	79.21	511.00	32.48	825.00	10.99	279.10	2.09	53.10	1.16	29.50	0.65	16.51
	295.00	439.00	86.65	559.00	32.88	835.20	11.09	281.70	2.28	57.90	1.26	32.00	0.65	16.51
W30 30 x 15 (762 x 381)	173.00	257.50	50.80	327.70	30.44	773.18	14.99	380.62	1.06	26.92	0.66	16.64	0.65	16.51
	191.00	284.20	56.10	361.90	30.68	779.27	15.04	382.02	1.18	29.97	0.71	18.03	0.65	16.51
	211.00	314.00	62.00	400.00	30.94	785.88	15.11	383.67	1.31	33.27	0.78	19.69	0.65	16.51
	235.00	349.70	68.98	445.00	31.30	795.00	15.06	382.40	1.50	38.10	0.83	21.10	0.65	16.51
	261.00	388.40	76.73	495.00	31.61	802.90	15.15	384.90	1.65	41.90	0.93	23.60	0.65	16.51
	292.00	434.50	85.72	553.00	32.01	813.10	15.26	387.50	1.85	47.00	1.02	25.90	0.65	16.51
	326.00	485.10	95.64	617.00	32.40	823.00	15.37	390.40	2.05	52.10	1.14	29.00	0.65	16.51
	357.00	531.00	104.94	677.00	32.80	833.00	15.47	393.00	2.24	56.90	1.24	31.50	0.79	20.00
W33 33 x 11½ (838 x 292)	118.00	176.00	34.70	223.90	32.86	834.64	11.48	291.59	0.74	18.80	0.55	13.97	0.70	17.78
	130.00	194.00	38.30	247.10	33.09	840.49	11.51	292.35	0.86	21.72	0.58	14.73	0.70	17.78
	141.00	210.00	41.60	268.40	33.30	845.82	11.54	292.99	0.96	24.38	0.61	15.37	0.70	17.78
	152.00	226.20	44.70	288.40	33.49	850.65	11.57	293.75	1.05	26.67	0.64	16.13	0.70	17.78
	169.00	252.00	49.45	319.00	33.82	859.00	11.50	292.10	1.22	31.00	0.67	17.00	0.70	17.78
	187.00	278.00	55.03	355.00	34.06	865.10	11.58	294.10	1.34	34.00	0.75	19.10	0.70	17.78
	204.00	304.00	59.83	386.00	34.30	871.20	11.64	295.70	1.46	37.10	0.81	20.60	0.70	17.78
	219.00	326.00	64.48	416.00	34.53	877.10	11.70	297.20	1.57	39.90	0.87	22.10	0.70	17.78
	243.00	362.00	71.30	460.00	34.85	885.20	11.80	299.70	1.73	43.90	0.96	24.40	0.70	17.78
	271.00	404.00	79.52	513.00	35.24	895.10	11.89	302.10	1.93	49.00	1.06	26.90	0.70	17.78
	301.00	449.00	88.66	572.00	35.63	905.00	12.02	305.20	2.13	54.10	1.18	30.00	0.70	17.78
	332.00	494.00	97.50	629.00	36.03	915.20	12.13	308.10	2.32	58.90	1.30	33.00	0.70	17.78
	361.00	537.00	106.02	684.00	36.42	925.10	12.23	310.60	2.52	64.00	1.40	35.60	0.70	17.78
W33 33 x 15¾ (838 x 400)	201.00	299.10	59.10	381.30	33.68	855.47	15.75	399.92	1.15	29.21	0.72	18.16	0.70	17.78
	221.00	328.90	65.00	419.40	33.93	861.82	15.81	401.45	1.27	32.26	0.78	19.69	0.70	17.78
	241.00	358.60	70.90	457.40	34.18	868.17	15.86	402.84	1.40	35.56	0.83	21.08	0.70	17.78
	263.00	391.40	77.35	499.00	34.53	877.10	15.80	401.40	1.57	39.90	0.87	22.10	0.70	17.78
	291.00	433.10	85.56	552.00	34.84	884.90	15.91	404.00	1.73	43.90	0.96	24.40	0.70	17.78
	318.00	473.20	93.47	603.00	35.16	893.10	15.98	406.00	1.89	48.00	1.04	26.40	0.70	17.78
	354.00	526.80	104.16	672.00	35.55	903.00	16.10	408.90	2.09	53.10	1.16	29.50	0.70	17.78
	387.00	575.90	113.77	734.00	35.95	913.10	16.20	411.50	2.28	57.90	1.26	32.00	0.70	17.78
	424.00	631.00	124.78	805.00	36.34	923.00	16.30	414.00	2.48	63.00	1.38	35.10	0.79	20.00
	468.00	697.00	137.80	889.00	36.81	935.00	16.46	418.00	2.72	69.10	1.52	38.60	0.79	20.00

Universal Beams



(Imperial units)

Section Size	Unit Weight		Section Area		Section Depth		Flange Width		Flange Thickness		Web Thickness		Corner Radius	
	M		A		D		B		T		t		r	
in (mm)	lb/ft	kg/m	in ²	cm ²	in	mm	in	mm	in	mm	in	mm	in	mm
W36 36 x 12 (914 x 305)	135.00	201.00	39.70	256.10	35.55	902.97	11.95	303.53	0.79	20.07	0.60	15.24	0.75	19.05
	150.00	224.00	44.20	285.20	35.85	910.59	11.98	304.17	0.94	23.88	0.63	15.88	0.75	19.05
	160.00	238.10	47.00	303.20	36.01	914.65	12.00	304.80	1.02	25.91	0.65	16.51	0.75	19.05
	170.00	253.00	50.00	322.60	36.17	918.72	12.03	305.56	1.10	27.94	0.68	17.27	0.75	19.05
	182.00	271.00	53.60	345.80	36.33	922.78	12.08	306.71	1.18	29.97	0.73	18.42	0.75	19.05
	194.00	289.00	57.00	367.70	36.49	926.85	12.12	307.72	1.26	32.00	0.77	19.43	0.75	19.05
	210.00	313.00	61.80	398.70	36.69	931.93	12.18	309.37	1.36	34.54	0.83	21.08	0.75	19.05
	232.00	345.00	68.20	440.00	37.12	942.90	12.12	307.80	1.57	39.90	0.87	22.10	0.75	19.05
	256.00	381.00	75.33	486.00	37.43	950.70	12.22	310.30	1.73	43.90	0.96	24.40	0.75	19.05
	286.00	426.00	83.08	536.00	37.83	960.90	12.32	312.80	1.89	48.00	1.06	26.90	0.75	19.05
	318.00	474.00	93.47	603.00	38.22	970.80	12.43	315.70	2.13	54.10	1.18	29.90	0.75	19.05
	350.00	521.00	102.77	663.00	38.61	980.70	12.55	318.80	2.32	58.90	1.30	33.00	0.75	19.05
	387.00	576.00	113.62	733.00	39.09	992.90	12.67	321.80	2.56	65.00	1.42	36.10	0.75	19.05
W36 36 x 16½ (914 x 419)	230.00	343.00	67.60	436.10	35.90	911.86	16.47	418.34	1.26	32.00	0.76	19.30	0.95	24.13
	245.00	365.00	72.10	465.20	36.08	916.43	16.51	419.35	1.35	34.29	0.80	20.32	0.95	24.13
	260.00	388.00	76.50	493.50	36.26	921.00	16.55	420.37	1.44	36.58	0.84	21.34	0.95	24.13
	280.00	417.00	82.40	531.60	36.52	927.61	16.60	421.51	1.57	39.88	0.89	22.48	0.95	24.13
	300.00	447.00	88.30	569.70	36.74	933.20	16.66	423.04	1.68	42.67	0.95	24.00	0.95	24.13
	328.00	488.10	96.41	622.00	37.09	942.10	16.63	422.40	1.85	47.00	1.02	25.90	0.95	24.13
	359.00	534.20	105.40	680.00	37.40	950.00	16.73	424.90	2.01	51.10	1.12	28.50	0.95	24.13
	393.00	584.80	115.63	746.00	37.80	960.10	16.83	427.50	2.20	55.90	1.22	31.00	0.95	24.13
	439.00	653.00	128.96	832.00	38.27	972.00	16.97	431.00	2.44	62.00	1.36	34.50	0.94	24.00
	527.00	784.00	154.69	998.00	39.21	996.00	17.20	437.00	2.91	73.90	1.61	40.90	0.94	24.00
	650.00	967.00	190.96	1,232.00	40.47	1,028.00	17.56	446.00	3.54	89.90	1.97	50.00	0.94	24.00
W40 40 x 12 (1016 x 305)	149.00	222.00	43.87	283.00	38.20	970.30	11.81	300.00	0.83	21.10	0.63	16.00	1.18	30.00
	167.00	249.00	49.14	317.00	38.59	980.20	11.81	300.00	1.02	26.00	0.65	16.50	1.18	30.00
	183.00	272.00	53.79	347.00	38.98	990.10	11.81	300.00	1.22	31.00	0.65	16.50	1.18	30.00
	211.00	314.00	62.00	400.00	39.37	1,000.00	11.81	300.00	1.41	35.90	0.75	19.10	1.18	30.00
	235.00	349.00	68.98	445.00	39.69	1,008.10	11.89	302.00	1.57	40.00	0.83	21.10	1.18	30.00
	264.00	393.00	77.50	500.00	40.00	1,016.00	11.93	303.00	1.73	43.90	0.96	24.40	1.18	30.00
	278.00	415.00	82.00	529.00	40.16	1,020.00	11.97	304.00	1.81	46.00	1.02	26.00	1.18	30.00
	294.00	438.00	86.34	557.00	40.39	1,025.90	12.02	305.40	1.93	49.00	1.06	26.90	1.18	30.00
	327.00	487.00	96.10	620.00	40.79	1,036.10	12.15	308.50	2.13	54.10	1.18	30.00	1.18	30.00
	331.00	494.00	97.50	629.00	40.79	1,036.00	12.17	309.00	2.13	54.00	1.22	31.00	1.18	30.00
	359.00	535.00	105.56	681.00	41.18	1,046.00	12.26	311.40	2.32	58.90	1.30	33.00	1.18	30.00
	392.00	584.00	115.32	744.00	41.57	1,056.00	12.36	314.00	2.52	64.00	1.42	36.00	1.18	30.00
W40 40 X 16 (1016 X 406)	199.00	296.00	58.44	377.00	38.66	982.00	15.75	400.00	1.07	27.10	0.65	16.50	1.18	30.00
	215.00	321.00	63.40	409.00	38.98	990.00	15.75	400.00	1.22	31.00	0.65	16.50	1.18	30.00
	249.00	371.00	73.16	472.00	39.37	1,000.00	15.75	400.00	1.42	36.10	0.75	19.00	1.18	30.00
	277.00	412.00	81.22	524.00	39.69	1,008.00	15.83	402.00	1.57	40.00	0.83	21.10	1.18	30.00
	297.00	443.00	87.42	564.00	39.84	1,012.00	15.83	402.00	1.65	41.90	0.93	23.60	1.18	30.00
	324.00	483.00	95.33	615.00	40.16	1,020.00	15.91	404.00	1.81	46.00	1.00	25.40	1.18	30.00
	362.00	539.00	106.49	687.00	40.55	1,030.00	16.02	407.00	2.01	51.10	1.12	28.40	1.18	30.00
	397.00	591.00	116.72	753.00	40.94	1,040.00	16.10	409.00	2.20	55.90	1.22	31.00	1.18	30.00
	431.00	642.00	126.79	818.00	41.26	1,048.00	16.22	412.00	2.36	60.00	1.34	34.00	1.18	30.00
	503.00	748.00	147.72	953.00	42.05	1,068.00	16.42	417.00	2.76	70.00	1.54	39.00	1.18	30.00
	593.00	883.00	174.38	1,125.00	42.99	1,092.00	16.69	424.00	3.23	82.00	1.79	45.50	1.18	30.00
W44 44 X 16 (1118 X 406)	230.00	343.00	67.74	437.00	42.91	1,090.00	15.75	400.00	1.22	31.00	0.71	18.00	0.79	20.00
	262.00	390.00	77.04	497.00	43.31	1,100.00	15.75	400.00	1.42	36.00	0.79	20.00	0.79	20.00
	290.00	433.00	85.41	551.00	43.62	1,108.00	15.83	402.00	1.57	40.00	0.87	22.00	0.79	20.00
	335.00	499.00	98.43	635.00	44.02	1,118.00	15.94	405.00	1.77	45.00	1.02	26.00	0.79	20.00

Material Spec: EN10025 S275JR
 EN10025 S355JR/J0/J2G3
 BS4360 Gr43A / 50B

Plates

Metric units (7.85 kg/mm m² - 0.7293 kg/mm ft²)

Thickness	Unit Weight	Width x Length, ft					
t	M	4 x 8	5 x 10	5 x 20	6x20	8 x 20	8 x 30
mm	kg	32	50	100	120	160	240
1.2	0.88	28.00	-	-	-	-	-
1.5	1.09	35.00	-	-	-	-	-
1.6	1.17	37.34	-	-	-	-	-
2.0	1.46	46.67	-	-	-	-	-
2.3	1.68	53.67	-	-	-	-	-
2.5	1.82	58.34	-	-	-	-	-
3.0	2.19	70.00	109.38	-	-	-	-
4.0	2.91	93.34	145.84	292.00	-	-	-
4.5	3.28	105.00	164.07	328.14	-	-	-
5.0	3.65	116.67	182.30	364.60	-	-	-
6	4.38	140.01	218.76	437.52	525.02	700.03	1,050.05
7	5.11	163.34	255.22	510.44	612.53	816.70	1,225.06
8	5.83	186.68	291.68	583.36	700.03	933.38	1,400.06
9	6.56	210.01	328.14	656.28	787.54	1,050.05	1,575.07
10	7.29	233.34	364.60	729.20	875.04	1,166.72	1,750.08
11	8.02	256.68	401.06	802.12	962.54	1,283.39	1,925.09
12	8.75	280.01	437.52	875.04	1,050.05	1,400.06	2,100.10
15	10.94	350.02	546.90	1,093.80	1,312.56	1,750.08	2,625.12
16	11.67	373.35	583.36	1,166.72	1,400.06	1,866.75	2,800.13
17	12.40	396.68	619.82	1,239.64	1,487.57	1,983.42	2,975.14
18	13.13	420.02	656.28	1,312.56	1,575.07	2,100.10	3,150.14
19	13.86	443.35	692.74	1,385.48	1,662.58	2,216.77	3,325.15
20	14.59	466.69	729.20	1,458.40	1,750.08	2,333.44	3,500.16
21	15.32	490.02	765.66	1,531.32	1,837.58	2,450.11	3,675.17
22	16.04	513.36	802.12	1,604.24	1,925.09	2,566.78	3,850.18
24	17.50	560.03	875.04	1,750.08	2,100.10	2,800.13	4,200.19
25	18.23	583.36	911.50	1,823.00	2,187.60	2,916.80	4,375.20
26	18.96	606.69	947.96	1,895.92	2,275.10	3,033.47	4,550.21
28	20.42	653.36	1,020.88	2,041.76	2,450.11	3,266.82	4,900.22
30	21.88	700.03	1,093.80	2,187.60	2,625.12	3,500.16	5,250.24
32	23.34	746.70	1,166.72	2,333.44	2,800.13	3,733.50	5,600.26
35	25.52	816.70	1,276.10	2,552.20	3,062.64	4,083.52	6,125.28
36	26.25	840.04	1,312.56	2,625.12	3,150.14	4,200.19	6,300.29
38	27.71	886.71	1,385.48	2,770.96	3,325.15	4,433.54	6,650.30
40	29.17	933.38	1,458.40	2,916.80	3,500.16	4,666.88	7,000.32
44	32.08	1,026.71	1,604.24	3,208.48	3,850.18	5,133.57	7,700.35
45	32.82	1,050.05	1,640.70	3,281.40	3,937.68	5,250.24	7,875.36
50	36.46	1,166.72	1,823.00	3,646.00	4,375.20	5,833.60	8,750.40
55	40.11	1,283.39	2,005.30	4,010.60	4,812.72	6,416.96	9,625.44
57	41.56	1,330.06	2,078.22	4,156.44	4,987.73	6,650.30	9,975.46
60	43.76	1,400.06	2,187.60	4,375.20	5,250.24	7,000.32	10,500.48
65	47.40	1,516.74	2,369.90	4,739.80	5,687.76	7,583.68	11,375.52
70	51.05	1,633.41	2,552.20	5,104.40	6,125.28	8,167.04	12,250.56
75	54.70	1,750.08	2,734.50	5,469.00	6,562.80	8,750.40	13,125.60
80	58.34	1,866.75	2,916.80	5,833.60	7,000.32	9,333.76	14,000.64
90	65.64	2,100.10	3,281.40	6,562.80	7,875.36	10,500.48	15,750.72
100	72.93	2,333.44	3,646.00	7,292.00	8,750.40	11,667.20	17,500.80
110	80.22	2,566.78	4,010.60	8,021.20	9,625.44	12,833.92	19,250.88
120	87.52	2,800.13	4,375.20	8,750.40	10,500.48	14,000.64	21,000.96
130	94.81	3,033.47	4,739.80	9,479.60	11,375.52	15,167.36	22,751.04
140	102.10	3,266.82	5,104.40	10,208.80	12,250.56	16,334.08	24,501.12
150	109.40	3,500.16	5,469.00	10,938.00	13,125.60	17,500.80	26,251.20

Material Spec: EN10025 S275JR
 EN10025 S355JR
 BS4360 Gr43A
 JIS G3101 SS400
 EH36

Boiler Plates

Mild Steel Chequered Plates

Boiler Plates

Metric units (7.85 kg/mm m² - 0.7293 kg/mm ft²)

Thickness Inch	Width x Length					
	6' x 20'		8' x 20'		8' x 30'	
	Calculated Weight					
	kg/pc	lb/pc	kg/pc	lb/pc	kg/pc	lb/pc
1/8	278	613	371	818	556	1,226
3/16	416	917	555	1,224	832	1,834
1/4	556	1,226	741	1,634	1,111	2,449
5/16	695	1,532	927	2,044	1,387	3,058
3/8	834	1,839	1,100	2,425	1,669	3,680
7/16	972	2,143	1,296	2,857	1,944	4,286
1/2	1,112	2,452	1,482	3,267	2,222	4,899
5/8	1,390	3,064	1,853	4,085	2,780	6,129
3/4	1,667	3,675	2,222	4,899	3,332	7,346
7/8	1,946	4,290	2,591	5,712	3,890	8,576
1	2,223	4,901	2,963	6,532	4,445	9,800
1-1/8	2,502	5,516	3,339	7,361	4,997	11,016
1-1/4	2,780	6,129	3,425	7,551	5,560	12,258
1-1/2	3,335	7,352	4,445	9,800	6,668	14,700
1-3/4	3,887	8,569	5,194	11,451	7,772	17,134
2	4,450	9,811	5,921	13,054	8,900	19,621
2-1/4	4,997	11,016	6,663	14,689	9,994	22,033
2-1/2	5,551	12,238	7,402	16,319	11,102	24,476
3	6,662	14,687	8,883	19,584	13,324	29,374
3-1/2	7,772	17,134	10,363	22,846	15,544	34,269
4	8,882	19,581	11,843	26,109	17,764	39,163
5	11,102	24,476	14,803	32,635	22,204	48,951
6	13,322	29,370	17,763	39,161	26,644	58,740

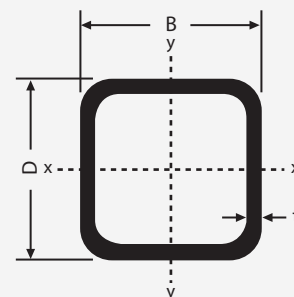
Material Spec: ASME SA516 GR 70(N)
ASTM SA516 GR 70(N)

Mild Steel Chequered Plates

Thickness (mm)	Weight (kg/ft ²)	Width x Length, ft		
		4' x 8'	5' x 10'	5' x 20'
		kg	kg	kg
3.0	2.25	72.00	113.00	-
4.0	3	96.10	150.00	-
4.5	3.38	108.00	169.00	-
5.0	3.75	120.00	188.00	-
6.0	4.5	144.00	225.00	450.00
7.5	5.63	180.00	282.00	563.00
8.0	6.01	192.00	300.00	601.00
9.0	6.76	216.00	338.00	676.00
12.0	9.01	288.00	450.00	901.00

Material Spec: JIS G3101 SS400
ASTM A36

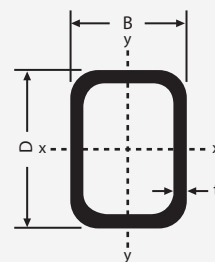
Cold Formed Square Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Moment of Inertia		Radius of Gyration		Moment of Inertia	
D x B	t	M	A	I_x	I_y	i_x	i_y	Z_x	Z_y
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³
13 x 13	1.2	0.40	0.51	0.10	0.10	0.45	0.45	0.16	0.16
	1.6	0.50	0.64	0.12	0.12	0.43	0.43	0.19	0.19
16 x 16	1.2	0.52	0.67	0.23	0.23	0.59	0.59	0.29	0.29
	1.6	0.67	0.85	0.27	0.27	0.57	0.57	0.34	0.34
19 x 19	1.2	0.64	0.81	0.41	0.41	0.71	0.71	0.44	0.44
	1.6	0.82	1.04	0.50	0.50	0.69	0.69	0.53	0.53
25 x 25	1.2	0.86	1.10	1.02	1.02	0.96	0.96	0.81	0.81
	1.6	1.12	1.43	1.26	1.26	0.94	0.94	1.01	1.01
	2.3	1.53	1.95	1.59	1.59	0.90	0.90	1.27	1.27
	3.0	1.93	2.48	1.96	1.96	0.89	0.89	1.54	1.54
32 x 32	1.2	1.12	1.42	2.16	2.16	1.24	1.24	1.38	1.38
	1.6	1.46	1.87	2.75	2.75	1.22	1.22	1.74	1.74
	2.3	2.02	2.68	3.93	3.93	1.21	1.21	2.46	2.46
	3.0	2.53	3.26	4.29	4.29	1.15	1.15	2.70	2.70
38 x 38	1.2	1.35	1.72	3.85	3.85	1.49	1.49	2.02	2.02
	1.6	1.77	2.26	4.91	4.91	1.47	1.47	2.58	2.58
	2.3	2.47	3.14	6.51	6.51	1.43	1.43	3.42	3.42
	3.0	3.13	4.04	7.99	7.99	1.41	1.41	4.26	4.26
50 x 50	1.6	2.38	3.03	11.70	11.70	1.96	1.96	4.68	4.68
	2.3	3.34	4.25	15.90	15.90	1.93	1.93	6.34	6.34
	3.0	4.24	5.40	19.39	19.39	1.89	1.89	7.75	7.75
	3.2	4.50	5.73	20.40	20.40	1.89	1.89	8.16	8.16
	4.5	6.01	7.66	25.22	25.22	1.81	1.81	10.09	10.09
65 x 65	6.0	7.56	9.63	28.76	28.76	1.72	1.72	11.50	11.50
	2.3	4.31	5.51	33.88	33.88	2.46	2.46	10.75	10.75
	3.0	5.52	7.16	42.46	42.46	2.44	2.44	13.44	13.44
	4.5	8.04	10.24	57.44	57.44	2.37	2.37	18.19	18.19
75 x 75	6.0	10.57	13.48	70.34	70.34	2.28	2.28	22.12	22.12
	2.3	5.14	6.55	57.10	57.10	2.95	2.95	15.20	15.20
	3.0	6.60	8.40	71.50	71.50	2.91	2.91	19.06	19.06
	3.2	7.01	8.92	75.50	75.50	2.91	2.91	20.10	20.10
75 x 75	4.5	9.55	12.16	98.16	98.16	2.84	2.84	26.17	26.17
	6.0	12.27	15.63	119.20	119.20	2.76	2.76	31.78	31.78

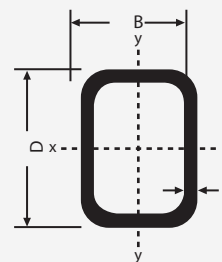
Cold Formed Rectangular Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Moment of Inertia		Radius of Gyration		Modulus of Section	
D x B	t	M	A	I_x	I_y	i_x	i_y	Z_x	Z_y
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³
25 x 12	1.20	0.67	0.85	0.62	0.21	0.87	0.50	0.51	0.33
	1.60	0.86	1.08	0.75	0.25	0.85	0.46	0.61	0.39
38 x 19	1.00	0.78	1.10	2.10	0.78	1.37	0.81	1.37	0.80
	1.20	1.02	1.30	2.41	0.81	1.36	0.79	1.27	0.85
	1.60	1.34	1.70	3.09	1.02	1.35	0.77	1.62	1.07
50 x 25	1.00	1.15	1.46	4.99	1.69	1.85	1.08	1.96	1.33
	1.20	1.36	1.86	5.99	2.04	1.84	1.07	2.36	1.59
	1.60	1.79	2.48	7.78	2.58	1.83	1.05	3.06	2.05
	2.30	2.48	3.19	9.86	3.23	1.76	1.01	3.94	2.59
	3.00	3.13	4.04	11.86	3.87	1.73	0.99	4.67	3.06
75 x 38	1.60	2.70	3.30	24.97	8.69	2.72	1.60	6.55	4.57
	2.30	3.85	4.85	34.60	12.00	2.67	1.57	9.23	6.30
	3.00	4.92	6.35	45.20	15.15	2.66	1.54	11.86	7.95
75 x 50	1.90	3.60	4.61	36.62	20.22	2.84	2.09	9.61	7.96
	2.30	4.24	5.40	41.86	22.36	2.78	2.03	11.16	8.94
	3.00	5.42	6.90	52.06	27.67	2.74	2.00	13.88	11.06
	4.50	7.78	9.91	70.20	36.87	2.66	1.92	18.72	14.74
	6.00	10.56	13.47	91.98	47.86	2.62	1.88	24.09	18.85
100 x 50	1.90	4.36	5.48	73.67	25.47	3.65	2.15	14.50	10.02
	2.30	5.14	6.55	84.80	29.00	3.60	2.10	17.00	11.60
	3.00	6.60	8.40	106.33	35.95	3.55	2.06	21.26	14.38
	3.20	7.01	8.93	112.00	38.00	3.55	2.06	22.50	15.20
	4.50	9.55	12.16	146.18	48.51	3.46	1.99	29.23	19.40
100 x 75	6.00	12.27	15.63	177.71	57.80	3.37	1.92	35.54	23.12
	2.30	6.04	7.70	112.22	72.25	3.81	3.06	22.44	19.26
	3.00	7.77	9.90	141.61	90.94	3.78	3.02	28.32	24.25
	4.50	11.31	14.41	197.48	126.12	3.70	2.95	39.49	33.63
	6.00	14.72	18.63	243.98	154.91	3.61	2.88	48.79	41.31
125 x 50	2.30	6.04	7.70	148.17	35.44	4.38	2.14	23.70	14.17
	3.00	7.77	9.90	186.87	44.24	4.34	2.11	29.90	17.69
	4.50	11.31	14.41	260.18	60.16	4.24	2.04	41.62	24.06
	6.00	14.62	18.63	320.77	72.32	4.14	1.97	51.32	28.92
125 x 75	2.30	6.95	8.85	192.00	87.50	4.65	3.14	30.60	23.30
	3.00	8.95	11.40	242.69	110.38	4.61	3.11	38.83	29.43
	3.20	9.52	12.13	257.00	117.00	4.60	3.10	41.10	31.10
	4.50	13.08	16.66	341.86	154.08	4.52	3.04	54.69	41.08
	6.00	16.98	21.63	426.98	190.62	4.44	2.96	68.31	50.83

Cold Formed Rectangular Hollow Sections

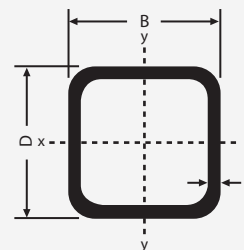


(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Moment of Inertia		Radius of Gyration		Modulus of Section	
D x B	t	M	A	I_x	I_y	i_x	i_y	Z_x	Z_y
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³
150 x 75	3.00	10.13	12.90	379.41	129.85	5.42	3.17	50.58	34.62
	3.20	10.80	13.73	402.00	137.00	5.41	3.16	53.60	36.60
	4.50	14.85	18.91	538.22	182.03	5.33	3.10	71.77	48.54
	6.00	19.33	24.63	677.58	226.32	5.24	3.03	90.34	60.35
	9.00	27.60	35.17	905.00	297.00	5.07	2.91	121.00	79.20
150 x 100	3.00	11.31	14.40	460.45	247.47	5.65	4.14	61.39	49.49
	3.20	12.00	15.33	488.00	262.00	5.64	4.14	65.10	52.50
	4.50	16.60	21.17	658.00	352.00	5.58	4.08	87.70	70.40
	6.00	21.70	27.63	835.00	444.00	5.50	4.01	111.08	88.80
	9.00	31.10	39.67	1,430.00	595.00	5.33	3.87	151.00	119.00
200 x 100	4.50	20.10	25.67	1,330.00	455.00	7.20	4.21	133.00	90.90
	6.00	26.40	33.63	1,700.00	577.00	7.12	4.14	170.00	115.00
	9.00	38.20	48.67	2,350.00	782.00	6.94	4.01	235.00	156.00
	12.00	49.10	62.53	2,860.00	939.00	6.76	3.87	286.00	188.00
200 x 150	6.00	31.10	39.63	2,270.00	1,460.00	7.56	6.06	227.00	194.00
	9.00	45.30	57.67	3,170.00	2,020.00	7.41	5.93	317.00	270.00
	12.00	58.50	74.53	3,920.00	2,500.00	7.25	5.79	392.00	330.00
250 x 150	6.00	35.80	45.63	3,890.00	1,770.00	9.23	6.23	311.00	236.00
	9.00	52.30	66.67	5,480.00	2,470.00	9.06	6.09	438.00	330.00
	12.00	67.90	86.53	6,850.00	3,070.00	8.90	5.95	548.00	409.00
300 x 200	6.00	45.20	57.63	7,370.00	3,960.00	11.30	8.29	491.00	396.00
	9.00	66.50	84.67	10,500.00	5,630.00	11.20	8.16	702.00	563.00
	12.00	86.80	110.50	13,400.00	7,110.00	11.00	8.02	890.00	711.00
400 x 200	6.00	54.70	69.63	14,800.00	5,090.00	14.60	8.55	739.00	509.00
	9.00	80.60	102.70	21,300.00	7,270.00	14.40	8.42	1,070.00	727.00
	12.00	106.00	134.50	27,300.00	9,230.00	14.20	8.28	1,360.00	923.00

Material Spec: ASTM A500 Gr A
 ASTM A500 Gr B
 EN10219 S275JR / JØ / J2H
 EN10219 S355JR / JØ / J2H

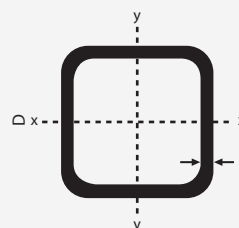
Hot Finished Square Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area Per Metre
D x B	t	M	A	I	r	Z	S	J	C	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ⁴	cm ³	m ² /m
20 x 20	2.00	1.12	1.40	0.74	0.73	0.74	0.93	1.22	1.07	0.07
	2.50	1.35	1.68	0.84	0.71	0.84	1.08	1.41	1.20	0.07
25 x 25	2.00	1.41	1.80	1.56	0.93	1.25	1.53	2.52	1.81	0.09
	2.50	1.74	2.18	1.81	0.91	1.44	1.82	2.97	2.08	0.09
	3.00	2.00	2.54	2.00	0.89	1.60	2.06	3.35	2.30	0.09
	3.20	2.15	2.68	2.06	0.88	1.65	2.15	3.48	2.37	0.09
30 x 30	2.50	2.14	2.68	3.33	1.11	2.22	2.74	5.40	3.22	0.11
	3.00	2.47	3.14	3.74	1.09	2.50	3.14	6.16	3.60	0.11
	3.20	2.65	3.32	3.89	1.08	2.59	3.29	6.44	3.74	0.11
35 x 35	4.00	3.76	4.79	7.48	1.25	4.28	5.47	12.50	6.16	0.13
	6.00	5.16	6.57	8.81	1.16	5.03	6.91	15.40	7.19	0.13
40 x 40	2.50	2.92	3.68	8.54	1.52	4.27	5.14	13.60	6.22	0.15
	3.00	3.45	4.34	9.78	1.50	4.89	5.97	15.70	7.10	0.15
	3.20	3.66	4.60	10.20	1.49	5.11	6.28	16.50	7.42	0.15
	4.00	4.46	5.59	11.80	1.45	5.91	7.44	19.50	8.54	0.15
	5.00	5.40	6.73	13.40	1.41	6.68	8.66	22.50	9.60	0.15
45 x 45	4.00	5.01	6.39	17.60	1.66	7.82	9.71	28.70	11.30	0.17
	5.00	6.07	7.73	20.10	1.61	8.95	11.41	33.50	12.90	0.17
50 x 50	2.50	3.71	4.68	17.50	1.93	6.99	8.29	27.50	10.20	0.19
	3.00	4.39	5.54	20.20	1.91	8.08	9.70	32.10	11.80	0.19
	3.20	4.66	5.88	21.20	1.90	8.49	10.20	33.80	12.40	0.19
	4.00	5.72	7.19	25.00	1.86	9.99	12.30	40.40	14.50	0.19
	5.00	6.97	8.73	28.90	1.82	11.60	14.50	47.60	16.70	0.19
	6.00	8.15	10.20	32.00	1.77	12.80	16.50	53.60	18.40	0.19
	6.30	8.49	10.60	32.80	1.76	13.10	17.00	55.20	18.80	0.18
	8.00	10.31	12.70	35.20	1.70	14.10	19.20	60.90	20.10	0.18
	10.00	11.70	14.90	37.60	1.59	15.00	21.40	66.70	21.40	0.17
60 x 60	3.00	5.39	6.74	36.20	2.32	12.10	14.30	56.90	17.70	0.23
	3.20	5.67	7.16	38.20	2.31	12.70	15.20	60.20	18.60	0.23
	4.00	6.97	8.79	45.40	2.27	15.10	18.30	72.50	22.00	0.23
	5.00	8.54	10.70	53.30	2.23	17.80	21.90	86.40	25.70	0.23
	6.00	10.00	12.60	59.90	2.18	20.00	25.10	98.60	28.80	0.23
	6.30	10.50	13.10	61.60	2.17	20.50	26.00	102.00	29.60	0.22
	8.00	12.80	16.00	69.70	2.09	23.20	30.40	118.00	33.40	0.22
	10.00	14.90	18.90	75.50	2.00	25.20	34.40	131.00	36.00	0.21
70 x 70	3.00	6.28	7.94	59.00	2.73	16.90	19.90	92	24.80	0.27
	3.60	7.46	9.42	68.60	2.70	19.60	23.30	108	28.70	0.27
	5.00	10.10	12.70	88.50	2.64	25.30	30.80	142	36.80	0.27
	6.00	11.90	15.00	101.00	2.59	28.70	35.50	163	41.60	0.27
	6.30	12.50	15.60	104.00	2.58	29.70	36.90	169	42.90	0.26
	8.00	15.30	19.20	120.00	2.50	34.20	43.80	200	49.20	0.26

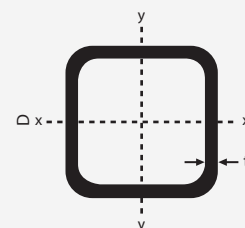
Hot Finished Square Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area Per Metre
D x B	t	M	A	I	r	Z	S	J	C	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ⁴	cm ³	m ² /m
75 x 75	3.20	7.25	9.08	77.50	2.92	20.70	24.30	121	30.30	0.29
	4.00	8.93	11.20	93.20	2.89	24.80	29.60	147	36.30	0.29
	5.00	11.00	13.70	111.00	2.84	29.60	35.80	177	43.00	0.29
	6.00	12.90	16.20	126.00	2.80	33.70	41.40	204	48.90	0.29
	6.30	13.50	16.90	131.00	2.78	34.90	43.00	212	50.50	0.28
	8.00	16.60	20.80	152.00	2.71	40.50	51.30	252	58.40	0.28
	10.00	19.60	24.90	170.00	2.61	45.40	59.40	289	65.10	0.27
80 x 80	3.00	7.18	9.14	89.80	3.13	22.50	26.30	140	33.00	0.31
	3.60	8.59	10.90	105.00	3.11	26.20	31.00	164	38.50	0.31
	5.00	11.70	14.70	137.00	3.05	34.20	41.10	217	49.80	0.31
	6.00	13.80	17.40	156.00	3.00	39.10	47.80	252	56.80	0.31
	6.30	14.40	18.10	162.00	2.99	40.50	49.70	262	58.70	0.30
	8.00	17.80	22.40	189.00	2.91	47.30	59.50	312	68.30	0.30
	10.00	21.10	26.90	214.00	2.82	53.50	69.30	360	76.80	0.29
90 x 90	3.60	9.72	12.30	152	3.52	33.80	39.70	237	49.70	0.35
	5.00	13.30	16.70	200	3.45	44.40	53.00	316	64.80	0.35
	6.00	15.70	19.80	230	3.41	51.10	61.80	367	74.30	0.35
	6.30	16.40	20.70	238	3.40	53.00	64.30	382	77.00	0.34
	8.00	20.40	25.60	281	3.32	62.60	77.60	459	90.50	0.34
	10.00	24.30	30.90	322	3.23	71.60	91.30	536	103.00	0.33
100 x 100	4.00	12.00	15.20	232	3.91	46.40	54.40	361	68.20	0.39
	5.00	14.80	18.70	279	3.86	55.90	66.40	439	81.80	0.39
	6.00	17.60	22.20	323	3.82	64.60	77.60	513	94.30	0.39
	6.30	18.40	23.20	336	3.80	67.10	80.90	534	97.80	0.38
	8.00	22.90	28.80	400	3.73	79.90	98.20	646	116.00	0.38
	10.00	27.90	34.90	462	3.64	92.40	116.00	761	133.00	0.37
	12.00	31.90	40.70	512	3.55	102.00	132.00	858	147.00	0.37
120 x 120	5.00	18.00	22.70	498	4.68	83.00	97.60	777	122	0.47
	6.00	21.30	27.00	579	4.63	96.60	115.00	911	141	0.47
	6.30	22.30	28.20	603	4.62	100.00	120.00	950	147	0.46
	8.00	27.90	35.20	726	4.55	121.00	146.00	1,160	176	0.46
	10.00	34.20	42.90	852	4.46	142.00	175.00	1,382	206	0.45
	12.50	41.60	52.10	982	4.34	164.00	207.00	1,623	236	0.45
140 x 140	5.00	21.10	26.70	807	5.50	115.00	135	1,253	170	0.55
	6.00	25.10	31.80	944	5.45	135.00	159	1,475	198	0.55
	8.00	32.90	41.60	1,195	5.36	171.00	204	1,892	249	0.54
	10.00	40.40	50.90	1,416	5.27	202.00	246	2,272	294	0.53
	12.50	49.50	62.10	1,653	5.16	236.00	293	2,696	342	0.53
150 x 150	5.00	22.70	28.70	1,002	5.90	134	156	1,550	197	0.59
	6.00	27.00	34.20	1,174	5.86	156	184	1,828	230	0.59
	6.30	28.30	35.80	1,223	5.85	163	192	1,909	240	0.58
	8.00	35.40	44.80	1,491	5.77	199	237	2,351	291	0.58
	10.00	43.60	54.90	1,773	5.68	236	286	2,832	344	0.57
	12.50	52.40	67.10	2,080	5.57	277	342	3,375	402	0.57
	16.00	66.40	83.00	2,430	5.41	324	411	4,026	467	0.56

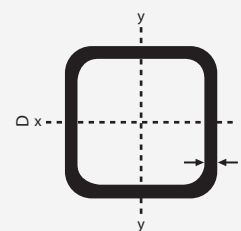
Hot Finished Square Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area Per Metre
D x B	t	M	A	I	r	Z	S	J	C	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ⁴	cm ³	m ² /m
160 x 160	12.50	57.30	72.10	2,576	5.98	322	395	4,158	467	0.61
	16.00	70.20	89.40	3,028	5.82	379	476	4,988	546	0.60
180 x 180	6.00	32.60	41.40	2,077	7.09	231	269	3,215	340	0.71
	6.30	34.20	43.30	2,168	7.07	241	281	3,361	355	0.70
	8.00	43.00	54.40	2,661	7.00	296	349	4,162	434	0.70
	10.00	53.00	66.90	3,193	6.91	355	424	5,048	518	0.69
	12.50	65.20	82.10	3,790	6.80	421	511	6,070	613	0.69
	16.00	81.40	102.00	4,504	6.64	500	621	7,343	724	0.68
200 x 200	5.00	30.50	38.70	2,445	7.95	245	283	3,756	362	0.79
	6.00	36.40	46.20	2,883	7.90	288	335	4,449	426	0.79
	6.30	38.20	48.40	3,011	7.89	301	350	4,653	444	0.78
	8.00	48.00	60.80	3,709	7.81	371	436	5,778	545	0.78
	10.00	59.30	74.90	4,471	7.72	447	531	7,031	655	0.77
	12.50	73.00	92.10	5,336	7.61	534	643	8,491	778	0.77
	16.00	91.50	115.00	6,394	7.46	639	785	10,340	927	0.76
220 x 220	5.00	33.50	42.70	3,281	8.76	298	344	5,028	442	0.87
	6.00	40.00	51.00	3,875	8.72	352	408	5,963	521	0.87
	8.00	52.70	67.20	5,002	8.63	455	532	7,765	669	0.86
	10.00	65.10	82.90	6,050	8.54	550	650	9,473	807	0.85
	12.00	77.20	98.30	7,023	8.45	638	762	11,090	933	0.85
	14.00	88.90	113.00	7,922	8.36	720	868	12,620	1,049	0.84
250 x 250	6.00	45.80	58.20	5,752	9.94	460	531	8,825	681	0.99
	6.30	48.10	61.00	6,014	9.93	481	556	9,238	712	0.98
	8.00	60.50	76.80	7,455	9.86	596	694	11,530	880	0.98
	10.00	75.00	94.90	9,055	9.77	724	851	14,110	1,065	0.97
	12.50	92.60	117.00	10,920	9.66	873	1,037	17,160	1,279	0.97
	16.00	117.00	147.00	13,270	9.50	1,061	1,280	21,140	1,546	0.96
260 x 260	6.00	47.60	60.60	6,491	10.40	499	576	9,951	740	1.02
	6.30	49.90	63.50	6,788	10.30	522	603	10,420	773	1.02
	8.00	62.80	80.00	8,423	10.30	648	753	13,010	956	1.02
	10.00	77.70	98.90	10,240	10.20	788	924	15,930	1,159	1.01
	12.00	92.20	117.00	11,950	10.10	920	1,087	18,730	1,348	1.01
	12.50	95.80	122.00	12,370	10.10	951	1,127	19,410	1,394	1.01
	14.00	106.00	136.00	13,560	10.00	1,043	1,244	21,400	1,525	1.00
	14.20	108.00	137.00	13,710	9.99	1,055	1,259	21,660	1,542	1.00
	16.00	120.00	153.00	15,060	9.91	1,159	1,394	23,940	1,689	1.00
300 x 300	6.00	55.10	70.00	10,080	12.00	672	772	15,407	997	1.18
	6.30	57.95	73.60	10,550	12.00	703	809	16,140	1,043	1.18
	8.00	73.10	92.80	13,130	11.90	875	1,013	20,190	1,294	1.18
	9.00	81.93	104.00	14,600	11.90	973	1,130	22,520	1,437	1.18
	10.00	90.70	115.00	16,030	11.80	1,068	1,246	24,810	1,575	1.17
	12.00	107.97	137.00	18,780	11.70	1,252	1,470	29,250	1,840	1.17
	12.50	112.00	142.00	19,440	11.70	1,296	1,525	30,330	1,904	1.17
	16.00	142.00	179.00	23,850	11.50	1,590	1,895	37,620	2,325	1.16

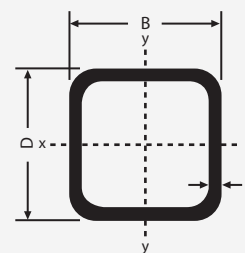
Hot Finished Square Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area Per Metre
D x B	t	M	A	I	r	Z	S	J	C	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ⁴	cm ³	m ² /m
350 x 350	6.00	64.50	82.20	16,170	14.00	924	1,058	24,650	1,373	1.38
	8.00	85.70	109.00	21,130	13.90	1,207	1,392	32,380	1,789	1.38
	10.00	106.00	135.00	25,880	13.90	1,479	1,715	39,890	2,185	1.37
	12.00	127.00	161.00	30,440	13.80	1,739	2,030	47,150	2,563	1.37
	12.50	132.00	167.00	31,540	13.70	1,802	2,107	48,930	2,654	1.37
	14.00	146.00	186.00	34,790	13.70	1,988	2,334	54,190	2,922	1.36
	14.20	148.00	189.00	35,210	13.70	2,012	2,364	54,880	2,957	1.36
	16.00	167.00	211.00	38,940	13.60	2,225	2,630	60,990	3,264	1.36
	19.00	190.00	248.00	44,820	13.50	2,561	3,055	70,760	3,744	1.35
	22.00	217.00	283.00	50,270	13.30	2,873	3,460	80,010	4,187	1.34
	25.00	242.00	318.00	55,320	13.20	3,161	3,845	88,750	4,595	1.34
400 x 400	8.00	97.90	125	31,860	16.00	1,593	1,830	48,700	2,363	1.58
	10.00	122.00	155	39,130	15.90	1,956	2,260	60,090	2,895	1.57
	12.00	145.00	185	46,130	15.80	2,306	2,679	71,180	3,405	1.57
	12.50	152.00	192	47,840	15.80	2,392	2,782	73,910	3,530	1.57
	14.00	168.00	214	52,870	15.70	2,643	3,087	81,960	3,894	1.56
	14.20	170.00	217	53,530	15.70	2,676	3,127	83,030	3,942	1.56
	16.00	192.00	243	59,340	15.60	2,967	3,484	92,440	4,362	1.56
	20.00	237.00	300	71,540	15.40	3,577	4,247	112,500	5,237	1.55
	22.00	251.00	327	77,260	15.40	3,863	4,612	122,100	5,646	1.54
	25.00	282.00	368	85,380	15.20	4,269	5,141	135,900	6,223	1.54
450 x 450	12.00	162	209	66,460	17.80	2,954	3,419	102,200	4,368	1.77
	16.00	213	275	85,860	17.70	3,816	4,459	133,200	5,620	1.76
	19.00	250	324	99,540	17.50	4,424	5,208	155,400	6,497	1.75
	22.00	286	371	112,500	17.40	5,000	5,929	176,700	7,324	1.74
	25.00	321	418	124,700	17.30	5,544	6,624	197,200	8,101	1.74
	28.00	355	464	136,300	17.10	6,058	7,292	216,800	8,832	1.73
	32.00	399	524	150,700	17.00	6,696	8,143	241,700	9,735	1.72
500 x 500	12.00	181	233	92,030	19.89	3,681	4,248	141,200	5,451	1.97
	16.00	238	307	119,300	19.71	4,771	5,554	184,400	7,038	1.96
	19.00	280	362	138,600	19.58	5,545	6,498	215,500	8,159	1.95
	22.00	320	415	157,100	19.44	6,283	7,411	245,600	9,222	1.94
	25.00	360	468	174,600	19.31	6,986	8,295	274,600	10,230	1.94
	28.00	399	520	191,300	19.18	7,653	9,149	302,600	11,180	1.93
	32.00	450	588	212,300	19.00	8,491	10,242	338,200	12,370	1.92
	36.00	498	654	231,700	18.82	9,269	11,283	372,000	13,470	1.91
550 x 550	16.00	263	339	160,400	21.75	5,833	6,769	247,300	8,616	2.16
	19.00	309	400	186,800	21.62	6,793	7,930	289,500	10,010	2.15
	22.00	355	459	212,100	21.49	7,714	9,058	330,400	11,340	2.14
	25.00	399	518	236,300	21.35	8,594	10,150	370,100	12,610	2.14
	28.00	443	576	259,500	21.22	9,436	11,220	408,400	13,810	2.13
	32.00	500	652	288,700	21.04	10,500	12,580	457,500	15,330	2.12
	36.00	555	726	316,100	20.86	11,500	13,890	504,400	16,740	2.11
	40.00	608	799	341,800	20.68	12,430	15,140	549,000	18,060	2.10

Hot Finished Square Hollow Sections

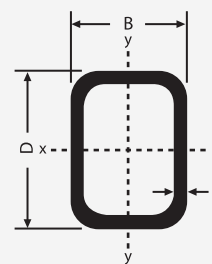


(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional Constants		Surface Area Per Metre
D x B	t	M	A	I	r	Z	S	J	C	
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm ⁴	cm ³	m ² /m
600 x 600	25.00	438	568	311,100	23.40	10,370	12,200	485,300	15,230	2.34
	28.00	487	632	342,100	23.26	11,410	13,490	536,300	16,720	2.33
	32.00	550	716	381,600	23.08	12,720	15,160	601,900	18,600	2.32
	36.00	611	798	418,800	22.91	13,960	16,770	664,900	20,370	2.31
	40.00	671	879	453,900	22.73	15,130	18,310	725,100	22,030	2.30
700 x 700	25.00	517	668	504,700	27.48	14,420	16,850	782,900	21,240	2.74
	28.00	575	744	556,600	27.35	15,900	18,670	867,000	23,380	2.73
	32.00	651	844	623,100	27.17	17,800	21,040	975,800	26,110	2.72
	36.00	724	942	686,500	26.99	19,610	23,330	1,081,000	28,700	2.71
	40.00	797	1,039	746,900	26.81	21,340	25,540	1,182,000	31,160	2.70

Material Spec: EN100219 S275JR / J2H
EN100219 S355JR / J2H

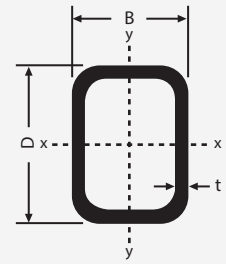
Hot Finished Rectangular Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area Per Metre
				Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	
D x B	t	M	A	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m
50 x 25	2.50	2.72	3.43	10.40	3.39	1.74	0.99	4.16	2.71	5.33	3.22	8.42	4.61	0.14
	3.00	3.22	4.04	11.90	3.83	1.72	0.97	4.76	3.06	6.18	3.71	9.64	5.20	0.14
	3.20	3.41	4.28	12.50	3.98	1.71	0.96	4.98	3.18	6.50	3.89	10.10	5.41	0.14
	4.00	4.07	5.19	14.40	4.48	1.66	0.93	5.75	3.59	7.67	4.54	11.60	6.11	0.14
50 x 30	2.50	2.92	3.68	11.80	5.22	1.79	1.19	4.73	3.48	5.92	4.11	11.70	5.73	0.15
	3.00	3.45	4.34	13.60	5.94	1.77	1.17	5.43	3.96	6.88	4.76	13.50	6.51	0.15
	3.20	3.66	4.60	14.20	6.20	1.76	1.16	5.68	4.13	7.25	5.00	14.20	6.80	0.15
	4.00	4.46	5.59	16.50	7.08	1.72	1.13	6.60	4.72	8.59	5.88	16.60	7.77	0.15
	5.00	5.40	6.73	18.70	7.89	1.67	1.08	7.49	5.26	10.00	6.80	19.00	8.67	0.15
60 x 40	2.50	3.71	4.68	22.80	12.10	2.21	1.60	7.61	6.03	9.32	7.02	25.10	9.73	0.19
	3.00	4.39	5.54	26.50	13.90	2.18	1.58	8.82	6.95	10.90	8.19	29.20	11.20	0.19
	3.20	4.66	5.88	27.80	14.60	2.18	1.57	9.27	7.29	11.50	8.64	30.80	11.70	0.19
	4.00	5.72	7.19	32.80	17.00	2.14	1.54	10.90	8.52	13.80	10.30	36.70	13.70	0.19
	5.00	6.97	8.73	38.10	19.50	2.09	1.50	12.70	9.77	16.40	12.20	43.00	15.70	0.19
	6.00	8.15	10.20	42.30	21.40	2.04	1.45	14.10	10.70	18.60	13.70	48.20	17.30	0.19
	6.30	8.49	10.60	43.40	21.90	2.02	1.44	14.50	11.00	19.20	14.20	49.50	17.60	0.18
	8.00	10.00	12.80	47.90	23.70	1.94	1.36	16.00	11.90	22.10	16.10	55.40	19.20	0.18
80 x 40	3.00	5.34	6.74	54.20	18.00	2.84	1.63	13.60	9.00	17.10	10.40	43.80	15.30	0.23
	3.20	5.67	7.16	57.20	18.90	2.83	1.63	14.30	9.46	18.00	11.00	46.20	16.10	0.23
	4.00	6.97	8.79	68.20	22.20	2.79	1.59	17.10	11.10	21.80	13.20	55.20	18.90	0.23
	5.00	8.54	10.70	80.30	25.70	2.74	1.55	20.10	12.90	26.10	15.70	65.10	21.90	0.23
	6.00	10.00	12.60	90.50	28.50	2.68	1.50	22.60	14.20	30.00	17.80	73.40	24.20	0.23
	6.30	10.50	13.10	93.30	29.20	2.67	1.49	23.30	14.60	31.10	18.40	75.60	24.80	0.22
	8.00	12.80	16.00	106.00	32.10	2.58	1.42	26.50	16.10	36.50	21.20	85.80	27.40	0.22
	10.00	14.90	18.90	115.00	33.70	2.47	1.33	28.80	16.90	41.30	23.50	92.50	28.90	0.21
80 x 50	3.00	5.81	7.34	63.10	30.20	2.93	2.03	15.80	12.10	19.40	13.90	64.80	19.70	0.25
	4.00	7.53	9.59	79.80	37.70	2.88	1.98	19.90	15.10	24.90	17.80	82.60	24.60	0.25
	5.00	9.33	11.70	94.40	44.10	2.84	1.94	23.60	17.70	29.90	21.30	98.40	28.80	0.25
	6.00	11.00	13.80	107.00	49.50	2.79	1.90	26.80	19.80	34.40	24.40	112.00	32.30	0.25
	8.00	14.11	17.60	127.00	57.40	2.69	1.81	31.70	23.00	42.20	29.60	135.00	37.50	0.24
	10.00	16.40	20.90	140.00	62.10	2.59	1.72	35.00	24.80	48.30	33.40	150.00	40.60	0.23
90 x 50	3.00	6.28	7.94	84.40	33.50	3.26	2.05	18.80	13.40	23.20	15.30	76.50	22.40	0.27
	3.20	6.63	8.44	89.10	35.30	3.25	2.04	19.80	14.10	24.60	16.20	80.90	23.60	0.27
	3.60	7.46	9.42	98.30	38.70	3.23	2.03	21.80	15.50	27.20	18.00	89.40	25.90	0.27
	4.00	8.15	10.40	107.00	41.90	3.21	2.01	23.80	16.80	29.80	19.60	97.50	28.00	0.27
	5.00	10.10	12.70	127.00	49.20	3.16	1.97	28.30	19.70	36.00	23.50	116.00	32.90	0.27
	6.00	11.90	15.00	145.00	55.40	3.11	1.92	32.20	22.10	41.60	27.00	133.00	37.00	0.27
	6.30	12.50	15.60	150.00	57.00	3.10	1.91	33.30	22.80	43.20	28.00	138.00	38.10	0.26
	8.00	15.30	19.20	174.00	64.60	3.01	1.84	38.60	25.80	51.40	32.90	160.00	43.20	0.26
	10.00	18.00	22.90	194.00	70.20	2.91	1.75	43.00	28.10	59.30	37.40	179.00	47.10	0.25

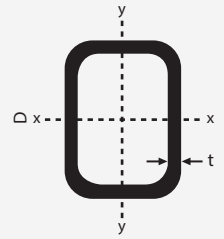
Hot Finished Rectangular Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area Per Metre
D x B	t	M	A	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	
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
100 x 50	3.00	6.75	8.54	110	36.80	3.58	2.08	21.90	14.70	27.30	16.80	88.40	25.00	0.29
	3.20	7.18	9.08	116	38.80	3.57	2.07	23.20	15.50	28.90	17.70	93.40	26.40	0.29
	4.00	8.86	11.20	140	46.20	3.53	2.03	27.90	18.50	35.20	21.50	113.00	31.40	0.29
	5.00	10.90	13.70	167	54.30	3.48	1.99	33.30	21.70	42.60	25.80	135.00	36.90	0.29
	6.00	12.90	16.20	190	61.20	3.43	1.95	38.10	24.50	49.40	29.70	154.00	41.60	0.29
	6.30	13.40	16.90	197	63.00	3.42	1.93	39.40	25.20	51.30	30.80	160.00	42.90	0.28
	8.00	16.60	20.80	230	71.70	3.33	1.86	46.00	28.70	61.40	36.30	186.00	48.90	0.28
	10.00	19.60	24.90	259	78.40	3.22	1.77	51.80	31.40	71.20	41.40	209.00	53.60	0.27
100 x 60	3.00	7.22	9.14	124	55.70	3.68	2.47	24.70	18.60	30.20	21.20	121	30.70	0.31
	3.60	8.59	10.90	145	64.80	3.65	2.44	28.90	21.60	35.60	24.90	142	35.60	0.31
	5.00	11.70	14.70	189	83.60	3.58	2.38	37.80	27.90	47.40	32.90	188	45.90	0.31
	6.00	13.80	17.40	217	95.00	3.53	2.34	43.40	31.70	55.10	38.10	216	52.10	0.31
	6.30	14.40	18.10	225	98.10	3.52	2.33	45.00	32.70	57.30	39.50	224	53.80	0.30
	8.00	17.80	22.40	264	113.00	3.44	2.25	52.80	37.80	68.70	47.10	265	62.20	0.30
120 x 60	3.60	9.72	12.30	227	76.30	4.30	2.49	37.90	25.40	47.20	28.90	183	43.30	0.35
	4.00	10.70	13.60	249	83.10	4.28	2.47	41.50	27.70	51.90	31.70	201	47.10	0.35
	5.00	13.30	16.70	299	98.80	4.23	2.43	49.90	32.90	63.10	38.40	242	56.00	0.35
	6.00	15.70	19.80	345	113.00	4.18	2.39	57.50	37.50	73.60	44.50	279	63.80	0.35
	6.30	16.40	20.70	358	116.00	4.16	2.37	59.70	38.80	76.70	46.30	290	65.90	0.34
	8.00	20.40	25.60	425	135.00	4.08	2.30	70.80	45.00	92.70	55.40	344	76.60	0.34
	10.00	24.30	30.90	488	152.00	3.97	2.21	81.40	50.50	109.20	64.40	396	86.10	0.33
120 x 80	5.00	14.80	18.70	365	193	4.42	3.21	60.90	48.20	74.60	56.10	401	77.90	0.39
	6.00	17.60	22.20	423	222	4.37	3.17	70.60	55.60	87.30	65.50	468	89.60	0.39
	6.30	18.40	23.20	440	230	4.36	3.15	73.30	57.60	91.00	68.20	487	92.90	0.38
	8.00	22.90	28.80	525	273	4.27	3.08	87.50	68.10	111.00	82.60	587	110.00	0.38
	10.00	27.90	34.90	609	313	4.18	2.99	102.00	78.10	131.00	97.30	688	126.00	0.37
150 x 100	5.00	18.70	23.70	739	392	5.58	4.07	98.50	78.50	119	90.10	807	127	0.49
	6.00	22.30	28.20	862	456	5.53	4.02	115.00	91.20	141	106.00	946	147	0.49
	6.30	23.30	29.50	898	474	5.52	4.01	120.00	94.80	147	110.00	986	153	0.48
	8.00	29.10	36.80	1,087	569	5.44	3.94	145.00	114.00	180	135.00	1,203	183	0.48
	10.00	35.70	44.90	1,282	665	5.34	3.85	171.00	133.00	216	161.00	1,432	214	0.47
	12.00	41.40	52.70	1,450	745	5.25	3.76	193.00	149.00	249	185.00	1,633	240	0.47
	12.50	42.80	54.60	1,488	763	5.22	3.74	198.00	153.00	256	190.00	1,679	246	0.47
160 x 80	4.50	16.24	20.60	679	229	5.75	3.33	84.90	57.10	106	64.80	547	97	0.47
	5.00	18.00	22.70	744	249	5.72	3.31	93.00	62.30	116	71.10	600	106	0.47
	6.00	21.30	27.00	868	288	5.67	3.27	108.00	72.00	136	83.30	701	122	0.47
	6.30	22.30	28.20	903	299	5.66	3.26	113.00	74.80	142	86.80	730	127	0.46
	8.00	27.90	35.20	1,091	356	5.57	3.18	136.00	89.00	175	106.00	883	151	0.46
	10.00	34.20	42.90	1,284	411	5.47	3.10	161.00	103.00	209	125.00	1,041	175	0.45
	12.00	39.50	50.30	1,449	455	5.37	3.01	181.00	114.00	240	142.00	1,175	194	0.45
	12.50	41.60	52.10	1,485	465	5.34	2.99	186.00	116.00	247	146.00	1,204	198	0.45

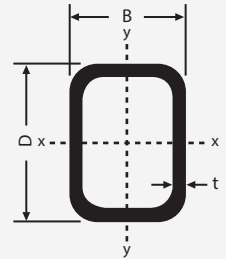
Hot Finished Rectangular Hollow Sections



(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area Per Metre
D x B	t	M	A	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	
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
200 x 100	5.00	22.70	28.70	1,495	505	7.21	4.19	149	101	185	114	1,204	172	0.59
	6.00	27.00	34.20	1,754	589	7.16	4.15	175	118	218	134	1,414	200	0.59
	6.30	28.30	35.80	1,829	613	7.15	4.14	183	123	228	140	1,475	208	0.58
	8.00	35.40	44.80	2,234	739	7.06	4.06	223	148	282	172	1,804	251	0.58
	10.00	43.60	54.90	2,664	869	6.96	3.98	266	174	341	206	2,156	295	0.57
	12.00	50.80	64.70	3,047	979	6.86	3.89	305	196	395	237	2,469	333	0.57
	12.50	53.40	67.10	3,136	1,004	6.84	3.87	314	201	408	245	2,541	341	0.57
	16.00	66.40	83.00	3,678	1,147	6.66	3.72	368	229	491	290	2,982	391	0.56
200 x 120	5.00	24.10	30.70	1,690	762	7.40	4.98	168	127	205	144	1,650	210	0.63
	6.30	30.10	38.30	2,070	929	7.34	4.92	207	155	253	177	2,030	255	0.62
	8.00	37.60	48.00	2,530	1,130	7.26	4.85	253	188	313	218	2,490	310	0.62
	10.00	46.30	58.90	3,030	1,340	7.17	4.76	303	223	379	263	3,000	367	0.61
	12.50	55.70	71.70	3,468	1,524	6.99	4.63	347	254	444	308	3,568	426	0.61
	16.00	71.38	89.40	4,221	1,813	6.87	4.50	422	302	550	377	4,247	497	0.60
200 x 150	6.00	31.70	40.20	2,318	1,485	7.60	6.08	232	198	277	227	2,820	313	0.69
	6.30	33.22	42.10	2,420	1,549	7.58	6.07	242	207	289	237	2,947	326	0.68
	8.00	41.70	52.80	2,971	1,894	7.50	5.99	297	253	359	294	3,643	398	0.68
	9.00	46.60	58.90	3,276	2,084	7.46	5.95	328	278	398	325	4,033	437	0.68
	10.00	51.40	64.90	3,568	2,264	7.41	5.91	357	302	436	356	4,409	475	0.67
	12.00	60.90	76.70	4,109	2,596	7.32	5.82	411	346	508	414	5,119	543	0.67
	12.50	63.20	79.60	4,236	2,673	7.30	5.80	424	356	525	428	5,287	559	0.67
250 x 150	6.00	36.40	46.20	3,965	1,796	9.27	6.24	317	239	385	270	3,877	396	0.79
	6.30	38.00	48.40	4,143	1,874	9.25	6.22	331	250	402	283	4,054	413	0.78
	8.00	48.00	60.80	5,111	2,298	9.17	6.15	409	306	501	350	5,021	506	0.78
	10.00	59.30	74.90	6,174	2,755	9.08	6.06	494	367	611	426	6,090	605	0.77
	12.50	73.00	92.10	7,387	3,265	8.96	5.96	591	435	740	514	7,326	717	0.77
	16.00	91.50	115.00	8,879	3,873	8.79	5.80	710	516	906	625	8,868	849	0.76
300 x 100	5.00	30.52	38.70	4,146	731	10.30	4.34	276	146	354	161	2,040	262	0.79
	6.00	36.20	46.20	4,893	854	10.30	4.30	326	171	419	190	2,399	306	0.79
	6.30	38.00	48.40	5,111	890	10.30	4.29	341	178	439	199	2,504	319	0.78
	8.00	48.00	61.10	6,386	1,087	10.20	4.22	426	217	551	247	3,066	387	0.78
	10.00	58.80	74.90	7,613	1,275	10.10	4.13	508	255	666	296	3,676	458	0.77
	12.00	70.30	88.70	8,818	1,447	9.97	4.04	588	289	779	343	4,223	520	0.77
	16.00	91.50	117.00	11,240	1,747	9.82	3.87	749	349	1,008	431	5,142	620	0.77
300 x 200	6.00	45.80	58.20	7,486	4,013	11.30	8.31	499	401	596	451	8,100	651	0.99
	6.30	48.10	61.00	7,829	4,193	11.30	8.29	522	419	624	472	8,476	681	0.98
	8.00	60.50	76.80	9,717	5,184	11.30	8.22	648	518	779	589	10,560	840	0.98
	10.00	75.00	94.90	11,820	6,278	11.20	8.13	788	628	956	721	12,910	1,015	0.97
	12.00	89.15	113.00	13,800	7,294	11.10	8.05	920	729	1,124	847	15,140	1,178	0.97
	12.50	92.60	117.00	14,270	7,537	11.00	8.02	952	754	1,165	877	15,680	1,217	0.97
	16.00	117.00	147.00	17,390	9,109	10.90	7.87	1,159	911	1,441	1,080	19,250	1,468	0.96
300 x 250	6.30	53.00	67.50	9,239	6,984	11.70	10.20	616	559	720	636	12,140	862	1.08
	8.00	66.80	85.10	11,500	8,682	11.60	10.10	767	695	902	796	15,170	1,067	1.08
	10.00	82.80	106.00	14,050	10,580	11.50	10.00	937	847	1,109	978	18,600	1,295	1.07
	12.50	102.00	130.00	17,050	12,810	11.40	9.91	1,137	1,025	1,358	1,196	22,680	1,561	1.07
	16.00	129.00	165.00	20,930	15,670	11.30	9.76	1,395	1,254	1,689	1,485	28,020	1,898	1.06

Hot Finished Rectangular Hollow Sections

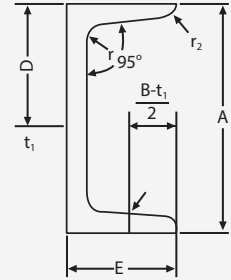


(Metric units)

Section Size	Wall Thickness	Unit Weight	Section Area	Second Moment of Area		Radius of Gyration		Elastic Modulus		Plastic Modulus		Torsional Constants		Surface Area Per Metre
D x B	t	M	A	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	Axis x-x	Axis y-y	J	C	
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
350 x 150	6.30	48.10	61.00	9,551	2,537	12.50	6.44	546	338	680	375	6,383	587	0.97
	8.00	60.50	77.00	11,880	3,125	12.40	6.36	679	417	851	467	7,917	721	0.97
	10.00	75.00	94.90	14,320	3,737	12.30	6.27	818	498	1,035	566	9,633	867	0.97
	12.50	92.60	117.00	17,300	4,450	12.20	6.17	988	593	1,263	686	11,620	1,032	0.97
	16.00	117.00	149.00	21,500	5,386	12.00	6.02	1,229	718	1,586	850	14,110	1,235	0.97
350 x 250	8.00	73.10	93.00	16,560	9,854	13.30	10.30	946	788	1,124	892	19,010	1,255	1.18
	10.00	90.70	116.00	20,270	12,020	13.20	10.20	1,158	963	1,385	1,098	23,330	1,526	1.18
	12.50	112.00	143.00	24,680	14,580	13.10	10.10	1,410	1,166	1,700	1,345	28,490	1,843	1.18
	16.00	142.00	181.00	30,440	17,860	13.00	9.95	1,739	1,429	2,121	1,672	35,280	2,248	1.18
400 x 120	6.30	50.00	63.70	11,880	1,752	13.70	5.24	594	292	766	322	5,035	527	1.03
	8.00	63.10	80.30	14,790	2,146	13.60	5.17	740	358	960	399	6,212	645	1.02
	10.00	78.10	99.50	18,050	2,569	13.50	5.08	903	428	1,180	486	7,501	771	1.02
	12.50	96.60	123.00	21,900	3,040	13.30	4.97	1,095	507	1,444	588	8,973	912	1.01
400 x 150	6.30	53.00	67.50	13,350	2,863	14.10	6.51	667	382	841	420	7,588	673	1.09
	8.00	66.80	85.10	16,630	3,528	14.00	6.44	832	470	1,054	524	9,415	828	1.08
	10.00	82.80	106.00	20,340	4,257	13.90	6.35	1,017	568	1,297	640	11,450	998	1.08
	12.50	102.00	130.00	24,720	5,087	13.80	6.24	1,236	678	1,589	778	13,820	1,191	1.07
	16.00	129.00	165.00	30,400	6,108	13.60	6.09	1,520	814	1,978	957	16,810	1,427	1.06
400 x 200	6.30	57.90	73.60	15,700	5,376	14.60	8.55	785	538	960	594	12,610	917	1.18
	8.00	73.10	92.80	19,560	6,660	14.50	8.47	978	666	1,203	743	15,740	1,135	1.18
	10.00	90.70	115.00	23,910	8,084	14.40	8.39	1,196	808	1,480	911	19,260	1,376	1.17
	12.50	112.00	142.00	29,060	9,738	14.30	8.28	1,453	974	1,813	1,111	23,440	1,656	1.17
	16.00	142.00	179.00	35,740	11,820	14.10	8.13	1,787	1,182	2,256	1,374	28,870	2,010	1.16
400 x 300	8.00	85.70	109.00	25,860	16,620	15.40	12.30	1,293	1,108	1,524	1,252	30,980	1,749	1.37
	10.00	106.00	136.00	31,750	20,360	15.30	12.30	1,587	1,357	1,882	1,544	38,140	2,136	1.37
	12.50	132.00	168.00	38,800	24,800	15.20	12.20	1,940	1,654	2,316	1,898	46,750	2,593	1.37
	16.00	167.00	213.00	48,100	30,620	15.00	12.00	2,405	2,041	2,899	2,371	58,200	3,186	1.37
450 x 250	8.00	85.40	109.00	30,080	12,140	16.60	10.60	1,337	971	1,622	1,081	27,080	1,629	1.38
	10.00	106.00	135.00	36,900	14,820	16.50	10.50	1,640	1,185	2,000	1,331	33,280	1,986	1.37
	12.50	132.00	167.00	45,030	17,970	16.40	10.40	2,001	1,438	2,458	1,631	40,720	2,406	1.37
	16.00	167.00	211.00	55,710	22,040	16.20	10.20	2,476	1,763	3,070	2,029	50,550	2,947	1.36
500 x 200	8.00	85.70	109.00	34,270	8,170	17.70	8.70	1,371	817	1,716	900	21,100	1,430	1.37
	10.00	106.00	135.00	41,760	9,891	17.60	8.60	1,670	989	2,105	1,101	25,870	1,737	1.37
	12.50	132.00	168.00	51,510	12,020	17.50	8.50	2,060	1,202	2,609	1,354	31,480	2,097	1.37
	16.00	167.00	213.00	63,930	14,670	17.30	8.31	2,557	1,467	3,267	1,683	38,830	2,554	1.37
500 x 300	10.00	122.00	155.00	53,760	24,440	18.60	12.60	2,150	1,629	2,595	1,826	52,450	2,696	1.57
	12.50	152.00	192.00	65,810	29,780	18.50	12.50	2,633	1,985	3,196	2,244	64,390	3,281	1.57
	16.00	192.00	243.00	81,780	36,770	18.30	12.30	3,271	2,451	4,005	2,804	80,330	4,044	1.56
	20.00	237.00	302.00	100,100	44,550	18.20	12.10	4,006	2,970	4,942	3,442	97,310	4,845	

Material Spec: EN100219 S275JR / J0 / J2H
EN100219 S355JR / J0 / J2H

U-channels

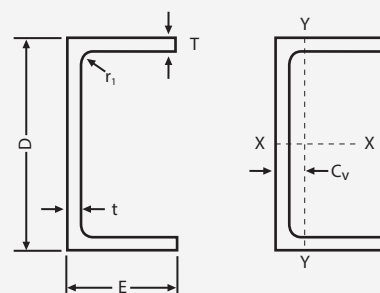


(Metric units)

Section Size	Unit weight		Section Depth		Flange Width		Web Thickness		Flange Thickness		Corner Radius				Section Area	
A x B x t1	M		A		B		t ¹		t ²		r ¹		r ²		A	
mm (in)	kg/m	lb/ft	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	cm ²	in ²
75 x 40 x 5	6.9	4.65	75	2.95	40	1.57	5.0	0.20	7.0	0.28	8	0.31	4.0	0.16	8.82	1.37
100 x 50 x 5	9.4	6.29	100	3.94	50	1.97	5.0	0.20	7.5	0.30	8	0.31	4.0	0.16	11.92	1.85
125 x 65 x 6	13.4	9.00	125	4.92	65	2.56	6.0	0.24	8.0	0.31	8	0.31	4.0	0.16	17.11	2.65
150 x 75 x 6.5	18.6	12.50	150	5.91	75	2.95	6.5	0.26	10.0	0.39	10	0.39	5.0	0.20	23.71	3.67
150 x 75 x 9	24.0	16.13	150	5.91	75	2.95	9.0	0.35	12.5	0.49	15	0.59	7.5	0.30	30.49	4.73
180 x 75 x 7	21.4	14.38	180	7.09	75	2.95	7.0	0.28	10.5	0.41	11	0.43	5.5	0.22	27.20	4.22
180 x 90 x 7.5	27.1	18.21	180	7.09	90	3.54	7.5	0.30	12.5	0.49	13	0.51	6.5	0.26	34.57	5.36
200 x 80 x 7.5	24.6	16.53	200	7.87	80	3.15	7.5	0.30	11.0	0.43	12	0.47	6.0	0.24	31.33	4.86
200 x 90 x 8	30.3	20.36	200	7.87	90	3.54	8.0	0.31	13.5	0.53	14	0.55	7.0	0.28	38.65	5.99
230 x 80 x 8	28.4	19.08	230	9.06	80	3.15	8.0	0.31	12.0	0.47	13	0.51	6.5	0.26	36.12	5.60
230 x 90 x 8.5	33.1	22.24	230	9.06	90	3.54	8.5	0.33	13.5	0.53	15	0.59	7.5	0.30	42.14	6.53
250 x 80 x 8	30.2	20.29	250	9.84	80	3.15	8.0	0.31	12.5	0.49	14	0.55	7.0	0.28	38.51	5.97
250 x 90 x 9	34.6	23.25	250	9.84	90	3.54	9.0	0.35	13.0	0.51	14	0.55	7.0	0.28	44.07	6.83
250 x 90 x 11	40.2	27.01	250	9.84	90	3.54	11.0	0.43	14.5	0.57	17	0.67	8.5	0.33	51.17	7.93
280 x 100 x 9	38.8	26.07	280	11.02	100	3.94	9.0	0.35	13.0	0.51	14	0.55	7.0	0.28	49.37	7.65
280 x 100 x 11.5	48.2	32.39	280	11.02	100	3.94	11.5	0.45	16.0	0.63	18	0.71	9.0	0.35	61.37	9.51
300 x 90 x 9	38.1	25.60	300	11.81	90	3.54	9.0	0.35	12.0	0.47	14	0.55	7.0	0.28	48.57	7.53
300 x 90 x 10	43.8	29.43	300	11.81	90	3.54	10.0	0.39	15.5	0.61	19	0.75	9.5	0.37	55.74	8.64
380 x 100 x 10.5	54.5	36.62	380	14.96	100	3.94	10.5	0.41	16.0	0.63	18	0.71	9.0	0.35	69.38	10.75
380 x 100 x 13	62.0	41.66	380	14.96	100	3.94	13.0	0.51	16.5	0.65	18	0.71	9.0	0.35	78.96	12.24

Material Spec: EN10025 S275JR
 EN10025 S355JR
 JIS G3101 SS400

Parallel Flange Channels



Designation		Thickness		Root Radius	Depth Between Fillets	Area Of Section	Centre Of Gravity	Ratios For Local Buckling		Second Moment Of Area	
Size	Mass Per Metre	Web	Flange							Axis	Axis
D x B		t	T	r_1	d	A	C_y	Flange	Web	x - x	x - y
	kg/m	mm	mm	mm	mm	cm ²	cm	B/T	d/t	cm ⁴	cm ⁴
100 x 50	10.2	5.0	8.5	9	65	13.0	1.7	5.9	13.0	208	32.3
125 x 65	14.8	5.5	9.5	12	82	18.8	2.3	6.8	14.9	483	80
150 x 75	17.9	5.5	10.0	12	106	22.8	2.6	7.5	19.3	861	131
150 x 90	23.9	6.5	12.0	12	102	30.4	3.3	7.5	15.7	1162	253
180 x 75	20.3	6.0	10.5	12	135	25.9	2.4	7.1	22.5	1370	146
180 x 90	26.1	6.5	12.5	12	131	33.2	3.2	7.2	20.2	1817	277
200 x 75	23.4	6.0	12.5	12	151	29.9	2.5	6.0	25.2	1963	170
200 x 90	29.7	7.0	14.0	12	148	37.9	3.1	6.4	21.1	2523	314
230 x 75	25.7	6.5	12.5	12	181	32.7	2.3	6.0	27.8	2748	181
230 x 90	32.2	7.5	14.0	12	178	41.0	2.9	6.4	23.7	3518	334
250 x 90	35.5	8.0	15.0	12	220	45.2	2.9	6.0	27.5	4510	364
260 x 75	27.6	7.0	12.0	12	212	35.1	2.1	6.3	30.3	3619	185
260 x 90	34.8	8.0	14.0	12	208	44.4	2.7	6.4	26.0	4728	353
300 x 90	41.4	9.0	15.5	12	245	52.7	2.6	5.8	27.2	7218	404
300 x 100	45.5	9.0	16.5	15	237	58.0	3.1	6.1	26.3	8229	568
380 x 100	54.0	9.5	17.5	15	315	68.7	2.8	5.7	33.2	15030	643
430 x 100	64.4	11.0	19.0	15	362	82.1	2.6	5.3	32.9	21940	722

Material Spec: EN10025 S275JR
EN10025 S355JR

Flat Bars

(Metric units)

Section Size		Unit Weight	Section Area
Thickness	width	M	A
mm	mm	kg/m	cm ²
3.0	12	0.28	0.36
3.0	16	0.38	0.48
3.0	19	0.45	0.57
3.0	25	0.59	0.75
3.0	32	0.75	0.96
3.0	38	0.90	1.14
3.0	50	1.18	1.50
4.5	12	0.42	0.54
4.5	16	0.57	0.72
4.5	19	0.67	0.85
4.5	25	0.88	1.125
4.5	32	1.13	1.44
4.5	38	1.34	1.71
4.5	44	1.55	1.98
4.5	50	1.77	2.25
4.5	65	2.30	2.93
4.5	75	2.60	3.37
4.5	100	3.55	4.50
5.0	25	0.98	1.25
5.0	50	1.96	2.50
6.0	12	0.57	0.72
6.0	16	0.75	0.96
6.0	19	0.90	1.14
6.0	25	1.13	1.50
6.0	32	1.51	1.92
6.0	38	1.79	2.28
6.0	44	2.07	2.64
6.0	50	2.36	3.00
6.0	65	3.06	3.90
6.0	75	3.53	4.50
6.0	90	4.24	5.40
6.0	100	4.71	6.00
6.0	125	5.89	7.50
6.0	150	7.05	9.00
6.0	200	9.42	12.00
6.0	250	11.78	15.00
6.0	300	14.13	18.00
8.0	25	1.57	2.00
8.0	32	2.01	2.56
8.0	38	2.39	3.04
8.0	44	2.76	3.52
8.0	50	3.14	4.00
8.0	65	5.65	5.20
8.0	75	4.71	6.00
8.0	90	5.65	7.20
8.0	100	6.28	8.00
8.0	125	7.85	10.00

Section Size		Unit Weight	Section Area
Thickness	width	M	A
mm	mm	kg/m	cm ²
9.0	19	1.34	1.71
9.0	25	1.77	2.25
9.0	32	2.26	2.88
9.0	35	2.47	3.15
9.0	38	2.68	3.42
9.0	44	3.11	3.96
9.0	50	3.53	4.50
9.0	65	4.59	5.85
9.0	75	5.30	6.75
9.0	90	6.36	8.10
9.0	100	7.06	9.999
9.0	125	8.83	11.25
9.0	150	10.60	13.50
9.0	180	12.70	16.20
9.0	200	14.10	18.00
9.0	230	16.20	20.70
9.0	250	17.70	22.50
9.0	300	21.20	27.00
12.0	25	2.36	3.00
12.0	32	3.01	3.84
12.0	35	3.31	4.20
12.0	38	3.58	4.62
12.0	44	4.14	5.28
12.0	50	4.71	6.00
12.0	65	6.12	7.80
12.0	75	7.06	9.00
12.0	90	8.48	10.80
12.0	100	9.42	12.00
12.0	125	11.80	15.00
12.0	150	14.10	18.00
12.0	180	17.00	21.60
12.0	200	18.80	24.00
12.0	230	21.70	27.60
12.0	250	23.60	30.00
12.0	280	26.40	33.60
12.0	300	28.30	36.00
16.0	25	3.14	4.00
16.0	32	4.02	5.12
16.0	38	4.77	6.08
16.0	44	5.53	7.04
16.0	50	6.28	8.00
16.0	65	8.16	10.40
16.0	75	9.42	12.00
16.0	90	11.30	14.40
16.0	100	12.60	16.00
16.0	125	15.70	20.00
16.0	150	18.80	24.00
16.0	230	28.90	36.80
16.0	250	31.40	40.00
16.0	280	35.20	44.80
16.0	300	37.70	48.00

Flat Bars

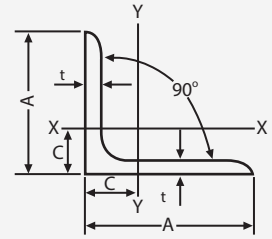
(Metric units)

Section Size		Unit Weight	Section Area
Thickness	width	M	A
mm	mm	kg/m	cm ²
19.0	38	5.67	7.22
19.0	44	6.56	8.36
19.0	50	7.46	9.50
19.0	65	9.69	12.35
19.0	75	11.20	14.25
19.0	90	13.40	17.10
19.0	100	14.90	19.00
19.0	125	18.60	23.75
19.0	150	22.40	28.50
19.0	180	26.80	34.20
19.0	200	29.80	38.00
19.0	230	34.30	43.70
19.0	250	37.30	47.50
19.0	280	41.80	53.20
19.0	300	44.70	57.00
22.0	50	8.64	11.00
22.0	65	11.20	14.30
22.0	75	13.00	16.50
22.0	90	15.50	19.80
22.0	100	17.30	22.00
22.0	125	21.60	27.50
22.0	150	25.90	33.00
22.0	180	31.10	39.60
22.0	200	34.50	44.00
22.0	230	39.70	50.60
22.0	250	43.20	55.00
22.0	280	48.40	61.00
22.0	300	51.80	66.00
25.0	50	9.81	12.50
25.0	65	12.80	16.25
25.0	75	14.70	18.75
25.0	125	24.50	31.25
25.0	150	29.40	37.50
25.0	180	35.30	45.00
25.0	200	39.20	50.00
25.0	230	45.10	57.50
25.0	250	49.10	62.50
25.0	280	55.00	70.00
25.0	300	58.90	75.00

Section Size		Unit Weight	Section Area
Thickness	width	M	A
mm	mm	kg/m	cm ²
28.0	100	22.00	28.00
28.0	125	27.50	35.00
28.0	150	33.00	42.00
28.0	180	39.60	50.40
28.0	200	44.00	56.00
28.0	230	50.60	64.40
28.0	250	55.00	70.00
28.0	280	61.50	78.40
28.0	300	65.90	84.00
32.0	100	25.10	32.00
32.0	125	31.40	40.00
32.0	150	37.70	48.00
32.0	180	45.20	57.60
32.0	200	50.20	64.00
32.0	230	57.80	73.60
32.0	250	62.80	80.00
32.0	280	70.30	89.60
32.0	300	75.40	96.00
36.0	100	28.30	36.00
36.0	125	35.30	45.00
36.0	150	42.40	54.00
36.0	180	50.90	64.80
36.0	200	56.50	72.00
36.0	230	65.00	82.80
36.0	250	70.60	90.00
36.0	280	79.10	100.80
36.0	300	84.80	108.00

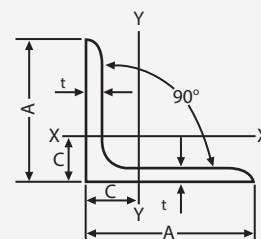
Material Spec: EN10025 S275JR
BS4360 Gr43A
JIS G3101 SS400

Equal Angle Bars



Designation		Mass Per Metre	Root Radius		Area of Section	Distance Centre of Gravity	Second Moment of Area			Second Moment Of Area			Elastic Modulus
Section Size	Thickness		Root	Toe			Axis	Axis	Axis	Axis	Axis	Axis	Axis
A x A	t		r ¹	r ¹	A	C ^x and C ^y	x - x, y - y	u - u	v - v	x - x, y - y	u - u	v - v	x - x, y - y
mm	mm	kg/m	mm	mm	cm ²	cm	cm ⁴	cm ⁴	cm ⁴	cm	cm	cm	cm ³
20 x 20	3.0	0.89	3.5	2.4	1.11	0.59	0.38	0.60	0.16	0.59	0.74	0.38	0.27
25 x 25	3.0	1.12	3.5	2.4	1.41	0.72	0.78	1.24	0.33	0.75	0.94	0.48	0.44
	4.0	1.45	3.5	2.4	1.84	0.76	1.00	1.58	0.42	0.74	0.93	0.48	0.57
	5.0	1.76	3.5	2.4	2.25	0.80	1.19	1.87	0.52	0.73	0.91	0.48	0.70
30 x 30	3.0	1.36	5.0	2.4	1.74	0.84	1.41	2.23	0.59	0.90	1.13	0.58	0.65
	4.0	1.76	5.0	2.4	2.27	0.88	1.81	2.86	0.76	0.89	1.12	0.58	0.85
	5.0	2.16	5.0	2.4	2.78	0.92	2.17	3.42	0.92	0.88	1.11	0.58	1.04
35 x 35	6.0	1.65	5.0	2.4	3.87	1.08	4.13	6.51	1.76	1.03	1.30	0.67	1.71
38 x 38	3.0	1.72	6.0	2.4	2.24	1.03	2.99	4.72	1.25	1.15	1.45	0.75	1.08
	4.0	2.36	6.0	2.4	2.93	1.07	3.85	6.10	1.61	1.15	1.44	0.74	1.41
	5.0	2.79	6.0	2.4	3.60	1.12	4.66	7.36	1.95	1.14	1.43	0.74	1.73
	6.0	3.33	6.0	2.4	4.25	1.15	5.40	8.51	2.29	1.13	1.41	0.73	2.04
40 x 40	3.0	1.83	6.0	2.4	2.36	1.08	3.51	5.55	1.47	1.22	1.53	0.79	1.20
	4.0	2.42	6.0	2.4	3.09	1.12	4.53	7.18	1.89	1.21	1.52	0.78	1.58
	5.0	2.95	6.0	2.4	3.80	1.17	5.48	8.68	2.29	1.20	1.51	0.78	1.94
	6.0	3.52	6.0	2.4	4.49	1.20	6.37	10.10	2.69	1.19	1.50	0.77	2.28
45 x 45	4.0	2.74	7.0	2.4	3.52	1.24	6.59	10.40	2.75	1.37	1.72	0.88	2.02
	5.0	3.38	7.0	2.4	4.33	1.29	7.99	12.60	3.34	1.36	1.71	0.88	2.49
	6.0	3.96	7.0	2.4	5.12	1.33	9.31	14.70	3.90	1.35	1.69	0.87	2.93
50 x 50	3.0	2.33	7.0	2.4	2.99	1.32	7.16	11.10	2.97	1.54	1.93	1.00	1.92
	4.0	3.06	7.0	2.4	3.92	1.37	9.17	14.50	3.82	1.53	1.92	0.99	2.52
	4.5	3.40	7.0	2.4	4.38	1.39	10.20	16.10	4.23	1.52	1.92	0.98	2.82
	5.0	3.77	7.0	2.4	4.83	1.41	11.20	17.70	4.64	1.52	1.91	0.98	3.11
	6.0	4.43	7.0	2.4	5.72	1.45	13.00	20.60	5.43	1.51	1.90	0.97	3.67
	8.0	5.78	7.0	2.4	7.44	1.53	16.50	25.90	6.97	1.49	1.87	0.97	4.74
60 x 60	5.0	4.55	8.0	2.4	5.86	1.65	19.80	31.40	8.24	1.84	2.31	1.19	4.56
	6.0	5.42	8.0	2.4	6.95	1.70	23.20	36.80	9.65	1.83	2.30	1.18	5.40
63 x 63	5.0	4.75	8.0	2.4	6.16	1.73	23.10	36.60	9.58	1.93	2.44	1.25	5.05
	6.0	5.71	8.0	2.4	7.31	1.77	27.10	42.90	11.20	1.92	2.42	1.24	5.98
	8.0	7.42	8.0	2.4	9.55	1.85	34.50	54.60	14.40	1.90	2.39	1.23	7.76
65 x 65	5.0	5.00	9.0	2.4	6.40	1.77	25.50	40.30	10.60	2.00	2.51	1.29	5.39
	6.0	5.91	9.0	2.4	7.59	1.82	29.90	47.40	12.40	1.98	2.50	1.28	6.38
	8.0	7.66	9.0	2.4	9.91	1.90	38.20	60.40	15.90	1.96	2.47	1.27	8.29
	9.0	8.55	9.0	2.4	11.00	1.94	42.00	66.40	17.60	1.95	2.45	1.26	9.21
70 x 70	6.0	6.38	9.0	2.4	8.19	1.94	37.70	59.80	15.70	2.15	2.70	1.38	7.46
	7.0	7.38	9.0	2.4	9.46	1.98	43.10	68.30	17.90	2.13	2.69	1.38	8.59
	8.0	8.29	9.0	2.4	10.71	2.02	48.30	76.50	20.10	2.12	2.67	1.37	9.70
75 x 75	6.0	6.85	10.0	4.8	8.76	2.04	45.70	72.40	19.00	2.28	2.88	1.47	8.38
	8.0	9.03	10.0	4.8	11.50	2.13	59.00	93.50	24.50	2.27	2.85	1.46	11.00
	9.0	9.96	10.0	4.8	12.80	2.17	65.30	103	27.20	2.26	2.84	1.46	12.30
	10.0	10.99	10.0	4.8	14.10	2.21	71.30	113	29.80	2.25	2.83	1.45	13.50
	12.0	13.00	10.0	4.8	16.70	2.29	82.70	130	35.00	2.23	2.80	1.45	15.90
80 x 80	6.0	7.32	10.0	4.8	9.36	2.17	56.00	88.70	23.20	2.45	3.08	1.58	9.60
	8.0	9.66	10.0	4.8	12.30	2.26	72.40	115	30.00	2.43	3.06	1.56	12.60
	10.0	11.80	10.0	4.8	15.10	2.34	87.70	139	36.50	2.41	3.03	1.55	15.50
90 x 90	6.0	8.28	11.0	4.8	10.60	2.41	81.00	128	33.70	2.76	3.48	1.78	12.30
	7.0	9.61	11.0	4.8	12.30	2.46	93.20	148	38.70	2.76	3.47	1.77	14.30
	8.0	10.90	11.0	4.8	13.90	2.50	105	167	43.50	2.75	3.46	1.77	16.20
	9.0	12.20	11.0	4.8	15.60	2.54	117	185	48.20	2.74	3.45	1.76	18.00
	10.0	13.30	11.0	4.8	17.20	2.58	128	202	52.90	2.73	3.43	1.76	19.90
	12.0	15.90	11.0	4.8	20.30	2.66	149	235	62.10	2.70	3.40	1.75	23.50
	13.0	17.00	11.0	4.8	21.90	2.70	159	251	66.60	2.69	3.39	1.74	25.20

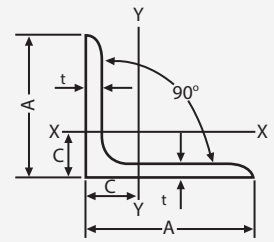
Equal Angle Bars



Designation		Mass Per Metre	Root Radius		Area of Section	Distance Centre of Gravity	Second Moment of Area			Second Moment Of Area			Elastic Modulus
Section Size	Thickness		Root	Toe			Axis	Axis	Axis	Axis	Axis	Axis	Axis
A x A	t		r ¹	r ¹	A	C ^x and C ^y	x - x, y - y	u - u	v - v	x - x, y - y	u - u	v - v	x - x, y - y
mm	mm	kg/m	mm	mm	cm ²	cm	cm ⁴	cm ⁴	cm ⁴	cm	cm	cm	cm ³
100 x 100	6.0	9.20	12.0	4.8	11.90	2.65	113	178	47.00	3.08	3.88	1.99	15.30
	7.0	10.70	12.0	4.8	13.70	2.70	130	206	53.90	3.08	3.87	1.98	17.80
	8.0	12.20	12.0	4.8	15.60	2.75	146	232	60.60	3.07	3.86	1.97	20.20
	10.0	15.00	12.0	4.8	19.20	2.83	178	283	73.80	3.05	3.84	1.96	24.80
	12.0	17.80	12.0	4.8	22.80	2.91	208	330	86.50	3.02	3.81	1.95	29.40
	13.0	19.10	12.0	4.8	24.50	2.95	222	352	92.80	3.01	3.79	1.95	31.50
	15.0	21.90	12.0	4.8	28.00	3.02	250	395	105	2.99	3.76	1.94	35.80
120 x 120	8.0	14.70	13.0	4.8	18.80	3.24	259	411	107	3.71	4.67	2.38	29.50
	10.0	18.20	13.0	4.8	23.30	3.32	316	502	130	3.69	4.64	2.37	36.40
	12.0	21.60	13.0	4.8	27.60	3.41	371	588	153	3.66	4.62	2.36	43.10
	15.0	26.60	13.0	4.8	34.00	3.52	448	710	186	3.63	4.57	2.34	52.80
125 x 125	8.0	14.90	14.0	4.8	19.70	3.36	294	466	122	3.87	4.87	2.49	32.20
	10.0	19.09	14.0	4.8	24.30	3.44	360	570	149	3.84	4.84	2.47	39.70
	12.0	22.67	14.0	4.8	28.90	3.53	422	669	174	3.82	4.81	2.46	47.00
130 x 130	8.0	15.90	14.0	4.8	20.50	3.48	332	527	138	4.03	5.07	2.59	34.90
	9.0	17.90	14.0	4.8	22.90	3.53	370	586	153	4.02	5.06	2.58	39.00
	10.0	19.70	14.0	4.8	25.30	3.57	406	645	168	4.01	5.05	2.57	43.10
	12.0	23.50	14.0	4.8	30.10	3.65	477	758	197	3.98	5.02	2.56	51.10
	15.0	28.80	14.0	4.8	37.10	3.77	578	916	240	3.95	4.97	2.54	62.60
	16.0	30.70	14.0	4.8	39.40	3.81	610	966	253	3.94	4.95	2.54	66.30
150 x 150	8.0	18.00	16.0	4.8	23.80	3.97	518	820	215	4.66	5.87	3.01	46.90
	10.0	23.00	16.0	4.8	29.50	4.06	635	1008	263	4.64	5.85	2.99	58.00
	12.0	27.30	16.0	4.8	35.00	4.14	748	1187	309	4.62	5.82	2.97	68.90
	15.0	33.60	16.0	4.8	43.20	4.26	909	1442	375	4.59	5.78	2.95	84.60
	16.0	35.70	16.0	4.8	45.90	4.30	960	1523	397	4.57	5.76	2.94	89.80
	18.0	40.10	16.0	4.8	51.20	4.38	1060	1680	440	4.55	5.73	2.93	99.80
	19.0	41.90	16.0	4.8	53.80	4.42	1109	1756	462	4.54	5.71	2.93	105.00
175 x 175	12.0	31.80	16.0	4.8	41.00	4.77	1208	1920	497	5.43	6.84	3.48	94.90
	15.0	39.40	16.0	4.8	50.70	4.89	1474	2342	606	5.39	6.80	3.46	117.00
200 x 200	12	36.55	18.0	4.8	47.20	5.38	1829	2906	753	6.23	7.85	4.00	125.00
	13.0	39.49	18.0	4.8	50.90	5.42	1967	3126	809	6.22	7.84	3.99	135.00
	15.0	45.30	18.0	4.8	58.30	5.50	2237	3555	919	6.19	7.81	3.97	154.00
	16.0	48.50	18.0	4.8	62.00	5.54	2369	3765	973	6.18	7.79	3.96	164.00
	18.0	54.20	18.0	4.8	69.40	5.62	2627	4174	1080	6.15	7.76	3.95	183.00
	20.0	59.90	18.0	4.8	76.60	5.70	2877	4569	1185	6.13	7.72	3.93	201.00
	24.0	71.10	18.0	4.8	90.80	5.85	3357	5322	1391	6.08	7.65	3.91	237.00
	25.0	73.60	18.0	4.8	94.30	5.89	3472	5502	1442	6.07	7.64	3.91	246.00
	26.0	76.80	18.0	4.8	97.80	5.93	3586	5680	1492	6.05	7.62	3.91	255.00
	25.0	93.70	20.0	4.8	120.00	7.14	7030	11170	2891	7.67	9.67	4.92	394.00
	28.0	104.00	20.0	4.8	133.00	7.25	7741	12290	3195	7.63	9.61	4.90	436.00
250 x 250	32.0	118.00	20.0	4.8	151.00	7.40	8650	13710	3593	7.58	9.54	4.89	491.00
	35.0	128.00	20.0	4.8	164.00	7.51	9305	14720	3887	7.54	9.49	4.88	532.00
300 x 300	35.0	155.00	24.0	18.0	197.00	8.71	16300	25900	6690	9.09	11.50	5.82	766.00
350 x 350	35.0	182.00	24.0	18.0	232.00	9.96	26600	42300	10800	10.70	13.50	6.83	1060.00

Material Spec: EN10025 S275JR
BS4360 Gr43A
JIS G3101 SS400

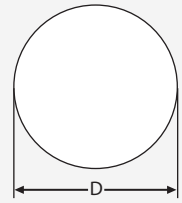
Unequal Angle Bars



Designation		Mass Per Metre	Root Radius		Area of Section	Distance Centre of Gravity		Second Moment of Area				Radius Of Gyration				Elastic Modulus		Angle x-x Axis to u-u Axis
Section Size	Thickness		Root	Toe				Axis	Axis	Axis	Axis	Axis	Axis	Axis	Axis	Axis	Axis	
A x B	t		r ¹	r ²	A	C ^x	C ^y	x - x	y - y	u - u	v - v	x - x	y - y	u - u	v - v	x - x	y - y	
mm	mm	kg/m	mm	mm	cm ²	cm	cm	cm ⁴	cm ⁴	cm ⁴	cm ⁴	cm	cm	cm	cm	cm ³	cm ³	
63 x 38	4.5	3.5	6.0	2.4	4.4	2.10	0.87	18.0	4.9	20.0	3.0	2.01	1.06	2.12	0.82	4.20	1.68	0.36
	6.0	4.4	6.0	2.4	5.8	2.17	0.93	23.0	6.3	25.0	3.8	1.99	1.04	2.10	0.82	5.50	2.18	0.36
75 x 50	6.0	5.7	7.0	2.4	7.2	2.45	1.21	40.9	14.6	47.1	8.5	2.38	1.42	2.55	1.08	8.10	3.87	0.44
	8.0	7.4	7.0	2.4	9.4	2.53	1.29	52.4	18.6	60.1	10.9	2.36	1.40	2.52	1.07	10.50	5.01	0.43
100 x 65	7.0	8.8	10.0	4.8	11.2	3.23	1.52	113.0	37.7	128.0	22.1	3.18	1.84	3.39	1.41	16.70	7.56	0.42
	8.0	9.94	10.0	4.8	12.7	3.28	1.56	127.0	42.3	144.0	24.9	3.17	1.83	3.38	1.40	18.90	8.57	0.41
	9.0	11.0	10.0	7.0	14.0	3.31	1.58	138.0	45.5	157.0	26.8	3.14	1.80	3.34	1.38	20.60	9.26	0.41
	10.0	12.3	10.0	4.8	15.6	3.36	1.64	154.0	51.1	175.0	30.2	3.14	1.81	3.35	1.39	23.20	10.50	0.41
	12.0	14.4	10.0	7.0	18.4	3.43	1.70	177.0	58.0	201.0	34.7	3.11	1.78	3.30	1.37	27.00	12.10	0.40
100 x 75	7.0	9.3	10.0	5.0	11.9	3.06	1.84	118.0	56.9	144.0	30.7	3.15	2.19	3.49	1.61	17.00	10.10	0.55
	8.0	10.6	10.0	4.8	13.5	3.11	1.88	133.0	64.2	163.0	34.6	3.14	2.18	3.48	1.60	19.30	11.40	0.55
	9.0	11.8	10.0	4.8	15.1	3.15	1.92	148.0	71.1	181.0	38.4	3.13	2.17	3.46	1.60	21.60	12.70	0.55
	10.0	13.0	10.0	4.8	16.6	3.19	1.96	162.0	77.7	198.0	42.2	3.12	2.16	3.45	1.59	23.80	14.00	0.55
	12.0	15.4	10.0	4.8	19.7	3.27	2.03	189.0	90.3	230.0	49.5	3.10	2.14	3.42	1.59	28.10	16.50	0.54
	13.0	16.5	10.0	4.8	21.2	3.31	2.07	202.0	96.3	245.0	53.1	3.09	2.13	3.40	1.58	30.20	17.70	0.54
125 x 75	6.5	10.0	11.0	4.8	12.7	4.07	1.62	206.0	56.6	228.0	34.4	4.02	2.11	4.23	1.64	24.40	9.63	0.36
	7.0	10.7	11.0	4.8	13.7	4.10	1.64	220.0	60.5	244.0	36.7	4.01	2.10	4.22	1.64	26.20	10.30	0.36
	8.0	12.2	11.0	4.8	15.5	4.14	1.69	249.0	68.1	275.0	41.3	4.00	2.10	4.21	1.63	29.70	11.70	0.36
	9.0	13.5	11.0	4.8	17.4	4.19	1.73	276.0	75.5	306.0	45.8	3.99	2.09	4.20	1.62	33.20	13.10	0.36
	10.0	15.0	11.0	4.8	19.2	4.23	1.77	303.0	82.6	336.0	50.2	3.98	2.08	4.18	1.63	36.70	14.40	0.36
	12.0	17.8	11.0	4.8	22.7	4.32	1.84	355.0	96.0	392.0	58.8	3.95	2.06	4.16	1.61	43.40	17.00	0.35
150 x 75	7.0	12.1	12.0	5.0	15.5	5.17	1.50	364.0	63.1	386.0	40.8	4.85	2.02	5.00	1.62	37.00	10.50	0.26
	8.0	13.8	11.0	4.8	17.5	5.23	1.54	411.0	71.2	436.0	45.8	4.84	2.02	4.99	1.62	42.10	11.90	0.26
	9.0	15.3	12.0	8.5	19.4	5.25	1.55	447.0	75.3	473.0	48.7	4.79	1.97	4.93	1.58	45.80	12.70	0.26
	10.0	17.0	11.0	4.8	21.7	5.32	1.62	503.0	86.3	533.0	55.8	4.82	2.00	4.96	1.60	52.00	14.70	0.26
	12.0	20.2	11.0	4.8	25.7	5.41	1.70	591.0	100.0	626.0	65.3	4.79	1.98	4.93	1.59	61.60	17.30	0.26
	15.0	24.8	11.0	4.8	31.7	5.53	1.81	715.0	120.0	756.0	79.2	4.75	1.95	4.89	1.58	75.50	21.10	0.25
150 x 90	8.0	14.3	10.0	5.0	18.7	4.93	1.97	436.0	121.0	484.0	72.7	4.83	2.54	5.09	1.97	43.30	17.20	0.36
	9.0	16.4	12.0	6.0	20.9	4.95	2.00	485.0	133.0	537.0	80.5	4.81	2.52	5.06	1.96	48.20	19.00	0.36
	10.0	18.2	12.0	4.8	23.2	5.00	2.04	536.0	147.0	595.0	89.2	4.81	2.52	5.06	1.96	53.70	21.20	0.36
	12.0	21.6	12.0	4.8	27.6	5.09	2.12	630.0	172.0	698.0	105.0	4.78	2.50	5.03	1.95	63.60	25.00	0.36
	15.0	26.6	12.0	4.8	34.0	5.21	2.24	764.0	207.0	844.0	127.0	4.74	2.47	4.99	1.93	78.10	30.60	0.35
150 x 100	8.0	15.2	12.0	8.5	19.4	4.70	2.24	441.0	158.0	508.0	90.9	4.77	2.86	5.12	2.17	42.80	20.30	0.44
	9.0	17.1	12.0	6.0	21.8	4.77	2.30	502.0	181.0	579.0	104.0	4.79	2.88	5.15	2.18	49.10	23.50	0.44
	10.0	19.0	13.0	6.5	24.2	4.80	2.34	552.0	198.0	635.0	114.0	4.78	2.86	5.13	2.17	54.10	25.80	0.44
	12.0	22.4	12.0	8.5	28.6	4.88	2.41	642.0	228.0	738.0	132.0	4.74	2.83	5.08	2.15	63.40	30.10	0.44
	14.0	26.1	12.0	6.0	33.2	4.98	2.50	744.0	265.0	856.0	153.0	4.74	2.82	5.08	2.15	74.30	35.30	0.43
	15.0	27.7	12.0	8.5	35.2	5.01	2.53	781.0	276.0	897.0	161.0	4.71	2.80	5.04	2.14	78.20	37.00	0.43
200 x 100	10.0	23.0	15.0	4.8	29.4	6.95	2.03	1,233.0	215.0	1,309.0	138.0	6.48	2.70	6.68	2.17	94.50	27.00	0.26
	12.0	27.3	15.0	4.8	34.9	7.04	2.11	1,454.0	252.0	1,544.0	162.0	6.45	2.68	6.65	2.16	112.00	31.90	0.26
	14.0	31.6	15.0	7.5	40.3	7.12	2.18	1,654.0	282.0	1,755.0	182.0	6.41	2.65	6.60	2.12	128.00	36.10	0.26
	15.0	33.7	15.0	4.8	43.1	7.17	2.23	1,772.0	303.0	1,879.0	197.0	6.41	2.65	6.60	2.14	138.00	39.00	0.26
200 x 150	12.0	32.0	15.0	4.8	40.9	6.10	3.63	1,667.0	813.0	2,046.0	434.0	6.38	4.45	7.07	3.26	120.00	71.50	0.55
	15.0	39.6	15.0	4.8	50.6	6.22	3.75	2,037.0	989.0	2,496.0	530.0	6.34	4.42	7.02	3.23	148.00	87.90	0.55
	18.0	47.4	15.0	4.8	60.1	6.34	3.86	2,390.0	1,155.0	2,923.0	622.0	6.30	4.38	6.97	3.22	175.00	104.00	0.55

Material Spec: EN10025 S275JR
BS4360 Gr43A
JIS G3101 SS400

Round Bars

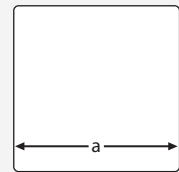


(Metric units)

Section Size	Unit Weight	Cross Section Area
Dia	Mass	Area
mm	kg/m	cm ²
6	0.22	0.28
10	0.62	0.79
12	0.89	1.13
13	1.04	1.33
14	1.21	1.54
16	1.58	2.01
18	2.00	2.55
19	2.23	2.04
20	2.47	3.14
22	2.98	3.80
24	3.55	4.52
25	3.85	4.91
26	4.17	5.31
28	4.83	6.16
29	5.19	6.61
30	5.55	7.07
32	6.31	8.04
35	7.55	9.62
38	8.90	11.34
44	11.90	15.21
50	15.40	19.63
65	26.00	33.18
75	34.70	44.18
90	49.90	63.62
100	61.70	78.54
125	96.30	122.70
150	139.00	176.70
200	247.00	314.20

Material Spec: EN10025 S275JR
 BS4360 Gr43A
 JIS G3101 SS400
 S20C
 S45C

Square Bars

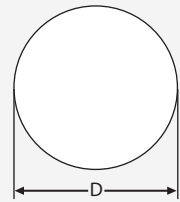


(Metric units)

Section Size	Unit Weight M		Side Length a		Section Area A		Moment of Inertia	Radius of Gyration	Modulus of Section
	mm	kg/m	lb/ft	mm	in	cm ²			
9	0.64	0.43	9	0.35	0.81	0.13	---	---	---
10	0.79	0.53	10	0.39	1.00	0.15	---	---	---
12	1.13	0.76	12	0.47	1.44	0.22	---	---	---
16	2.01	1.35	16	0.63	2.56	0.40	0.01	0.18	0.04
17	2.27	1.53	17	0.67	2.89	0.45	0.02	0.19	0.50
18	2.54	1.71	18	0.71	3.24	0.50	0.02	0.21	0.06
19	2.83	1.90	19	0.75	3.61	0.56	0.03	0.22	0.07
20	3.14	2.11	20	0.79	4.00	0.62	---	---	---
22	3.80	2.55	22	0.87	4.84	0.75	0.05	0.25	0.11
23	4.15	2.79	23	0.91	5.29	0.82	0.06	0.26	0.12
24	4.52	3.04	24	0.94	5.76	0.89	0.66	0.27	0.14
25	4.91	3.30	25	0.98	6.25	0.97	0.08	0.28	0.16
26	5.31	3.57	26	1.02	6.76	1.05	0.09	0.30	0.18
28	6.15	4.13	28	1.10	7.84	1.22	0.12	0.32	0.22
30	7.07	4.75	30	1.18	9.00	1.39	0.16	0.34	0.28
32	8.04	5.40	32	1.26	10.24	1.59	0.21	0.36	0.33
34	9.07	6.09	34	1.34	11.56	1.79	0.27	0.39	0.40
35	9.62	6.46	35	1.38	12.25	1.90	0.30	0.40	0.44
36	10.2	6.85	36	1.42	12.96	2.01	0.34	0.41	0.48
38	11.3	7.59	38	1.50	14.44	2.24	0.42	0.43	0.56
44	15.2	10.21	44	1.73	19.36	3.00	---	---	---
50	19.6	13.17	50	1.97	25.00	3.87	1.25	0.57	1.27
55	23.7	15.93	55	2.17	30.25	4.69	1.83	0.63	1.69
60	28.3	19.02	60	2.36	36.00	5.58	2.60	0.68	2.20
65	33.2	22.31	65	2.56	42.25	6.55	3.58	0.74	2.80
70	38.5	25.87	70	2.76	49.00	7.59	4.81	0.80	3.49
75	44.2	29.70	75	2.95	56.25	8.72	6.34	0.85	4.29
80	50.2	33.73	80	3.15	64.00	9.92	8.19	0.91	5.21
85	56.7	38.10	85	3.35	72.25	11.20	10.45	0.97	6.22
90	63.6	42.74	90	3.54	81.00	12.55	13.14	1.02	7.38
95	70.8	47.58	95	3.74	90.25	13.99	16.31	1.08	8.73
100	78.5	52.75	100	3.94	100	15.50	20.01	1.14	10.19
110	95	63.84	110	4.33	121	18.75	29.31	1.25	13.55
120	113	75.93	120	4.72	144	22.32	41.56	1.36	17.58
130	133	89.37	130	5.12	169	26.19	57.18	1.48	22.33
140	154	103.48	140	5.51	196	30.38	76.88	1.59	27.89
150	177	118.94	150	5.91	225	34.87	101.38	1.71	34.30
160	201	135.07	160	6.30	256	39.68	131.20	1.82	41.68

Material Spec: EN10025 S275JR
BS4360 Gr43A
JIS G3101 SS400

British Standard Welded Steel Pipes



BS 1387: 1985 / EN 10255: 2004

Thickness Class						Calculated Weight					
	Nominal Size		Outside Diameter	Wall Thickness	Inside Diameter	Plain Ends		Threads & Coupling		Test Pressure	
Light "A"	mm	in	mm	mm	mm	kg/m	kg/6m	kg/m	kg/6m	kgf/cm²	Psi
	15	1/2	21.4	2.00	17.4	0.95	5.71	0.96	5.77	50	700
	20	3/4	26.9	2.35	22.2	1.41	8.46	1.42	8.52	50	700
	25	1	33.8	2.65	28.5	2.01	12.06	2.03	12.18	50	700
	32	1-1/4	42.5	2.65	37.2	2.58	15.48	2.61	15.66	50	700
	40	1-1/2	48.4	2.90	42.6	3.25	19.50	3.29	19.74	50	700
	50	2	60.2	2.90	54.4	4.11	24.66	4.18	25.08	50	700
	65	2-1/2	76.0	3.25	69.5	5.80	34.80	5.92	35.52	50	700
	80	3	88.7	3.25	82.2	6.81	40.86	6.98	41.88	50	700
Medium "B"	90	3-1/2	101.1	3.65	93.8	8.75	52.50	8.93	53.57	50	700
	100	4	113.9	3.65	106.6	9.89	59.34	10.20	61.20	50	700
	15	1/2	21.7	2.65	16.4	1.22	7.32	1.23	7.38	50	700
	20	3/4	27.2	2.65	21.9	1.58	9.48	1.59	9.54	50	700
	25	1	34.2	3.25	27.7	2.44	14.64	2.46	14.76	50	700
	32	1-1/4	42.9	3.25	36.4	3.14	18.84	3.17	19.02	50	700
	40	1-1/2	48.8	3.25	42.3	3.61	21.66	3.65	21.90	50	700
	50	2	60.8	3.65	53.5	5.10	30.60	5.17	31.02	50	700
	65	2-1/2	76.6	3.65	69.3	6.51	39.06	6.63	39.78	50	700
	80	3	89.5	4.05	81.4	8.47	50.82	8.64	51.84	50	700
	100	4	114.9	4.50	105.9	12.10	72.60	12.4	74.40	50	700
	125	5	140.6	4.85	130.9	16.20	97.20	16.7	100.20	50	700
	150	6	166.1	4.85	156.4	19.20	115.20	19.8	118.80	50	700
	200	8	216.3	5.80	204.7	30.10	180.60	--	--	50	700
	250	10	267.4	6.60	254.2	42.40	254.40	--	--	50	700
	Heavy "C"	300	12	318.5	6.90	304.7	53.00	318.00	--	--	50
350		14	355.6	7.90	339.8	67.70	406.20	--	--	50	700
400		16	406.4	7.90	390.6	77.53	465.20	--	--	50	700
450		18	457.2	7.90	441.4	87.36	524.13	--	--	50	700
500		20	508.0	7.90	492.2	97.33	583.96	--	--	50	700
15		1/2	21.7	3.25	15.2	1.45	8.70	1.46	8.76	50	700
20		3/4	27.2	3.25	20.7	1.90	11.40	1.91	11.46	50	700
25		1	34.2	4.05	26.1	2.97	17.82	2.99	17.94	50	700
32		1-1/4	42.9	4.05	34.8	3.84	23.04	3.87	23.22	50	700
40		1-1/2	48.8	4.05	40.7	4.43	26.58	4.47	26.82	50	700
50		2	60.8	4.50	51.8	6.17	37.02	6.24	37.44	50	700
65		2-1/2	76.6	4.50	67.6	7.90	47.40	8.02	48.12	50	700
80		3	89.5	4.85	79.8	10.10	60.60	10.3	61.80	50	700
100		4	114.9	5.40	104.1	14.40	86.40	14.7	88.20	50	700
125		5	140.6	5.40	129.8	17.80	106.80	18.3	109.80	50	700
150		6	166.1	5.40	155.3	21.20	127.20	21.8	130.80	50	700

Tolerance for Thickness: Light Tubes = -8%
Medium & Heavy Tubes = -10%

API Line Pipes/ General Data Seamless and Welded Steel Pipes

Nom. Size	Schedule 10		Schedule 20		Schedule 30		Standard (P.E.)		Schedule 40		Schedule 60		Extra Strong		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		XX Strong	
	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft	Wall	Lbs/Ft
1/8	0.405				0.068	0.24	0.068	0.24	0.068	0.24			0.095	0.31	0.095	0.31										
1/4	0.540				0.088	0.42	0.088	0.42	0.088	0.42			0.119	0.54	0.119	0.54										
3/8	0.657				0.091	0.57	0.091	0.57	0.091	0.57			0.126	0.74	0.126	0.74										
1/2	0.840				0.109	0.85	0.109	0.85	0.109	0.85			0.147	1.09	0.147	1.09										
3/4	1.050				0.113	1.13	0.113	1.13	0.113	1.13			0.154	1.47	0.154	1.47										
1	1.032				0.133	1.68	0.133	1.68	0.133	1.68			0.179	2.17	0.179	2.17										
1-1/4	1.660				0.140	2.27	0.140	2.27	0.140	2.27			0.191	3.00	0.191	3.00										
1-1/2	1.900				0.145	2.72	0.145	2.72	0.145	2.72			0.200	3.63	0.200	3.63										
2	2.375				0.154	3.65	0.154	3.65	0.154	3.65			0.218	5.02	0.218	5.02										
2-1/2	2.875				0.203	5.79	0.203	5.79	0.203	5.79			0.276	7.66	0.276	7.66										
3	3.500				0.216	7.58	0.216	7.58	0.216	7.58			0.300	10.25	0.300	10.25										
3-1/2	4.000				0.226	9.11	0.226	9.11	0.226	9.11			0.318	12.50	0.318	12.50										
4	4.500				0.237	10.79	0.237	10.79	0.237	10.79			0.337	14.98	0.337	14.98										
5	5.563				0.258	14.62	0.258	14.62	0.258	14.62			0.375	20.78	0.375	20.78										
6	6.625				0.280	18.97	0.280	18.97	0.280	18.97			0.432	28.57	0.432	28.57										
8	8.625				0.322	28.55	0.322	28.55	0.322	28.55			0.500	43.39	0.500	43.39										
10	10.750				0.365	40.48	0.365	40.48	0.365	40.48			0.500	54.74	0.500	54.74										
12	12.750				0.375	49.56	0.375	49.56	0.406	53.52			0.500	65.24	0.688	88.63										
14	14.000	0.250	36.71	0.375	54.57	54.57	0.375	54.57	0.438	63.44			0.500	72.09	0.750	106.13										
16	16.000	0.250	42.05	0.312	52.27	62.58	0.375	62.58	0.500	82.77			0.500	82.77	0.844	136.61										
18	18.000	0.250	47.39	0.312	58.94	82.15	0.375	82.15	0.562	104.67			0.500	93.45	0.938	170.92										
20	20.000	0.250	52.73	0.375	78.60	104.13	0.375	104.13	0.594	123.11			0.500	104.13	1.031	208.87										
22	22.000	0.250	58.07	0.375	86.61	114.81	0.375	114.81	0.688	171.29			0.500	114.81	1.125	250.81										
24	24.000	0.250	63.41	0.375	94.62	140.68	0.375	140.68	0.688	171.29			0.500	125.49	1.219	296.53										
26	26.000	0.312	85.60	0.500	136.17		0.375	102.63					0.500	136.17												
28	28.000	0.312	92.41	0.500	146.85	182.73	0.375	110.64					0.500	146.83												
30	30.000	0.312	98.93	0.500	157.53	196.08	0.375	118.65					0.500	157.53												
32	32.000	0.312	105.59	0.500	168.21	209.43	0.375	126.66		229.92			0.500	168.21												
34	34.000	0.312	112.25	0.500	178.89	222.73	0.375	134.67		244.77			0.500	178.89												
36	36.000	0.312	118.92	0.500	189.57	236.13	0.375	142.68		282.35			0.500	189.57												