

Cold Formed Circular Hollow Section

AS 1163

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	I_t	C_t	A_s	L	B/T
mm	mm	Kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
21.3	2.0	0.952	1.21	0.57	0.69	0.54	0.75	1.14	1.07	0.07	1050.49	10.65
21.3	2.5	1.159	1.48	0.66	0.67	0.62	0.89	1.33	1.25	0.07	862.75	8.52
21.3	3.0	1.354	1.72	0.74	0.66	0.70	1.01	1.48	1.39	0.07	738.60	7.10
26.9	2.0	1.228	1.56	1.22	0.88	0.91	1.24	2.44	1.81	0.08	814.24	13.45
26.9	2.5	1.504	1.92	1.44	0.87	1.07	1.49	2.88	2.14	0.08	664.74	10.76
26.9	3.0	1.768	2.25	1.63	0.85	1.21	1.72	3.27	2.43	0.08	565.54	8.97
33.7	2.0	1.564	1.99	2.51	1.12	1.49	2.01	5.02	2.98	0.11	639.57	16.85
33.7	2.5	1.924	2.45	3.00	1.11	1.78	2.44	6.00	3.56	0.11	519.86	13.48
33.7	3.0	2.271	2.89	3.44	1.09	2.04	2.84	6.88	4.08	0.11	440.27	11.23
42.4	2.0	1.993	2.54	5.19	1.43	2.45	3.27	10.38	4.90	0.13	501.84	21.20
42.4	2.5	2.460	3.13	6.26	1.41	2.95	3.99	12.52	5.91	0.13	406.51	16.96
42.4	3.0	2.915	3.71	7.25	1.40	3.42	4.67	14.49	6.84	0.13	343.05	14.13
42.4	4.0	3.788	4.83	8.99	1.36	4.24	5.92	17.98	8.48	0.13	263.99	10.60
48.3	2.0	2.284	2.91	7.81	1.64	3.23	4.29	15.62	6.47	0.15	437.89	24.15
48.3	2.5	2.824	3.60	9.46	1.62	3.92	5.25	18.92	7.83	0.15	354.14	19.32
48.3	3.2	3.559	4.53	11.59	1.60	4.80	6.52	23.17	9.59	0.15	280.97	15.09
48.3	4.0	4.370	5.57	13.77	1.57	5.70	7.87	27.54	11.40	0.15	228.83	12.08
48.3	5.0	5.339	6.80	16.15	1.54	6.69	9.42	32.31	13.38	0.15	187.29	9.66
60.3	2.0	2.876	3.66	15.58	2.06	5.17	6.80	31.16	10.34	0.19	347.76	30.15
60.3	2.5	3.564	4.54	18.99	2.05	6.30	8.36	37.99	12.60	0.19	280.62	24.12
60.3	3.0	4.239	5.40	22.22	2.03	7.37	9.86	44.45	14.74	0.19	235.89	20.10
60.3	4.0	5.554	7.07	28.17	2.00	9.34	12.70	56.35	18.69	0.19	180.06	15.08
60.3	5.0	6.819	8.69	33.48	1.96	11.10	15.33	66.95	22.21	0.19	146.65	12.06
76.1	2.0	3.655	4.66	31.98	2.62	8.40	10.98	63.96	16.81	0.24	273.61	38.05
76.1	2.5	4.538	5.78	39.19	2.60	10.30	13.55	78.37	20.60	0.24	220.38	30.44
76.1	3.0	5.408	6.89	46.10	2.59	12.11	16.04	92.19	24.23	0.24	184.90	25.37
76.1	4.0	7.112	9.06	59.06	2.55	15.52	20.82	118.11	31.04	0.24	140.60	19.03
76.1	5.0	8.767	11.17	70.92	2.52	18.64	25.32	141.84	37.28	0.24	114.06	15.22
76.1	6.0	10.373	13.21	81.76	2.49	21.49	29.56	163.52	42.97	0.24	96.41	12.68
76.1	6.3	10.845	13.81	84.82	2.48	22.29	30.78	169.64	44.58	0.24	92.21	12.08
88.9	2.0	4.286	5.46	51.57	3.07	11.60	15.11	103.14	23.20	0.28	233.31	44.45
88.9	2.5	5.327	6.79	63.37	3.06	14.26	18.67	126.75	28.51	0.28	187.73	35.56
88.9	3.0	6.355	8.10	74.76	3.04	16.82	22.15	149.53	33.64	0.28	157.35	29.63
88.9	4.0	8.375	10.67	96.34	3.00	21.67	28.85	192.68	43.35	0.28	119.40	22.23
88.9	5.0	10.346	13.18	116.37	2.97	26.18	35.24	232.75	52.36	0.28	96.66	17.78
88.9	6.0	12.267	15.63	134.94	2.94	30.36	41.31	269.88	60.72	0.28	81.52	14.82
88.9	6.3	12.833	16.35	140.24	2.93	31.55	43.07	280.47	63.10	0.28	77.92	14.11
101.6	2.0	4.913	6.26	77.63	3.52	15.28	19.84	155.26	30.56	0.32	203.56	50.80
101.6	2.5	6.110	7.78	95.61	3.50	18.82	24.56	191.22	37.64	0.32	163.67	40.64
101.6	3.0	7.295	9.29	113.04	3.49	22.25	29.17	226.07	44.50	0.32	137.08	33.87
101.6	4.0	9.628	12.26	146.28	3.45	28.80	38.12	292.57	57.59	0.32	103.87	25.40
101.6	5.0	11.912	15.17	177.47	3.42	34.93	46.70	354.94	69.87	0.32	83.95	20.32
101.6	6.0	14.146	18.02	206.68	3.39	40.68	54.91	413.35	81.37	0.32	70.69	16.93
101.6	6.3	14.807	18.86	215.07	3.38	42.34	57.30	430.13	84.67	0.32	67.54	16.13
114.3	2.5	6.893	8.78	137.26	3.95	24.02	31.25	274.52	48.03	0.36	145.08	45.72
114.3	3.0	8.234	10.49	162.55	3.94	28.44	37.17	325.10	56.88	0.36	121.44	38.10
114.3	4.0	10.881	13.86	211.07	3.90	36.93	48.69	422.13	73.86	0.36	91.91	28.58
114.3	5.0	13.478	17.17	256.92	3.87	44.96	59.77	513.84	89.91	0.36	74.20	22.86
114.3	6.0	16.025	20.41	300.21	3.83	52.53	70.45	600.42	105.06	0.36	62.40	19.05
114.3	6.3	16.780	21.38	312.71	3.82	54.72	73.57	625.43	109.44	0.36	59.60	18.14
114.3	8.0	20.972	26.72	379.49	3.77	66.40	90.57	758.98	132.81	0.36	47.68	14.29
139.7	3.0	10.114	12.88	301.09	4.83	43.11	56.07	602.18	86.21	0.44	98.88	46.57
139.7	4.0	13.386	17.05	392.86	4.80	56.24	73.68	785.72	112.49	0.44	74.70	34.93
139.7	5.0	16.610	21.16	480.54	4.77	68.80	90.76	961.08	137.59	0.44	60.21	27.94
139.7	6.0	19.783	25.20	564.26	4.73	80.78	107.33	1128.52	161.56	0.44	50.55	23.28
139.7	6.3	20.726	26.40	588.62	4.72	84.27	112.20	1177.24	168.54	0.44	48.25	22.17
139.7	8.0	25.983	33.10	720.29	4.66	103.12	138.93	1440.58	206.24	0.44	38.49	17.46

Cold Formed Circular Hollow Section

AS 1163

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	I_t	C_t	A_s	L	B/T
mm	mm	Kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
168.3	3.0	12.230	15.58	532.28	5.85	63.25	81.98	1064.57	126.51	0.53	81.77	56.10
168.3	4.0	16.208	20.65	697.09	5.81	82.84	108.00	1394.18	165.68	0.53	61.70	42.08
168.3	5.0	20.136	25.65	855.85	5.78	101.70	133.38	1711.69	203.41	0.53	49.66	33.66
168.3	6.0	24.015	30.59	1008.69	5.74	119.87	158.12	2017.39	239.74	0.53	41.64	28.05
168.3	6.3	25.170	32.06	1053.42	5.73	125.18	165.42	2106.84	250.37	0.53	39.73	26.71
168.3	8.0	31.626	40.29	1297.27	5.67	154.16	205.74	2594.54	308.32	0.53	31.62	21.04
168.3	10.0	39.039	49.73	1563.98	5.61	185.86	250.92	3127.97	371.71	0.53	25.62	16.83
177.8	4.0	17.145	21.84	825.09	6.15	92.81	120.85	1650.17	185.62	0.56	58.33	44.45
177.8	5.0	21.308	27.14	1013.97	6.11	114.06	149.34	2027.94	228.11	0.56	46.93	35.56
177.8	6.0	25.421	32.38	1196.22	6.08	134.56	177.16	2392.43	269.12	0.56	39.34	29.63
177.8	6.3	26.646	33.94	1249.62	6.07	140.56	185.38	2499.24	281.13	0.56	37.53	28.22
177.8	8.0	33.500	42.68	1541.44	6.01	173.39	230.83	3082.87	346.78	0.56	29.85	22.23
177.8	10.0	41.382	52.72	1861.98	5.94	209.45	281.90	3723.96	418.89	0.56	24.17	17.78
177.8	12.0	49.067	62.51	2159.06	5.88	242.86	330.45	4318.11	485.73	0.56	20.38	14.82
177.8	12.5	50.957	64.91	2229.79	5.86	250.82	342.20	4459.59	501.64	0.56	19.62	14.22
193.7	4.0	18.713	23.84	1072.79	6.71	110.77	143.97	2145.58	221.54	0.61	53.44	48.43
193.7	5.0	23.268	29.64	1320.23	6.67	136.32	178.08	2640.46	272.63	0.61	42.98	38.74
193.7	6.0	27.774	35.38	1559.72	6.64	161.05	211.46	3119.45	322.09	0.61	36.01	32.28
193.7	6.3	29.116	37.09	1630.05	6.63	168.31	221.33	3260.09	336.61	0.61	34.35	30.75
193.7	8.0	36.637	46.67	2015.54	6.57	208.11	276.05	4031.07	416.22	0.61	27.29	24.21
193.7	10.0	45.303	57.71	2441.59	6.50	252.10	337.79	4883.18	504.20	0.61	22.07	19.37
193.7	12.0	53.772	68.50	2839.20	6.44	293.15	396.75	5678.40	586.31	0.61	18.60	16.14
193.7	12.5	55.858	71.16	2934.31	6.42	302.97	411.07	5868.62	605.95	0.61	17.90	15.50
219.1	4.0	21.219	27.03	1563.84	7.61	142.75	185.09	3127.67	285.50	0.69	47.13	54.78
219.1	5.0	26.400	33.63	1928.04	7.57	176.00	229.24	3856.09	351.99	0.69	37.88	43.82
219.1	6.0	31.532	40.17	2281.95	7.54	208.80	272.54	4563.89	416.60	0.69	31.71	36.52
219.1	6.3	33.062	42.12	2386.14	7.53	217.81	285.37	4772.28	435.63	0.69	30.25	34.78
219.1	8.0	41.648	53.06	2959.63	7.47	270.16	356.68	5919.27	540.33	0.69	24.01	27.39
219.1	9.5	49.106	62.56	3442.30	7.42	314.22	417.64	6884.60	628.44	0.69	20.36	23.06
219.1	10.0	51.567	65.69	3598.44	7.40	328.47	437.56	7196.88	656.95	0.69	19.39	21.91
219.1	12.0	61.289	78.07	4199.88	7.33	383.38	515.26	8399.76	766.75	0.69	16.32	18.26
219.1	12.5	63.688	81.13	4344.58	7.32	396.58	534.20	8689.16	793.17	0.69	15.70	17.53
244.5	5.0	29.532	37.62	2698.58	8.47	220.74	286.84	5397.16	441.49	0.77	33.86	48.90
244.5	6.0	35.291	44.96	3198.53	8.43	261.64	341.37	6397.07	523.28	0.77	28.34	40.75
244.5	6.3	37.009	47.14	3346.03	8.42	273.70	357.54	6692.05	547.41	0.77	27.02	38.81
244.5	8.0	46.660	59.44	4168.45	8.37	340.32	447.63	8320.89	680.65	0.77	21.43	30.56
244.5	10.0	57.831	73.67	5073.15	8.30	414.98	550.24	10146.29	829.96	0.77	17.29	24.45
244.5	12.0	68.806	87.65	5938.34	8.23	485.75	649.25	11876.69	971.51	0.77	14.53	20.38
244.5	12.5	71.518	91.11	6147.42	8.21	502.86	673.45	12294.84	1005.71	0.77	13.98	19.56
273	5.0	33.046	42.10	3780.81	9.48	276.98	359.16	7561.63	553.97	0.86	30.26	54.60
273	6.0	39.508	50.33	4487.08	9.44	328.72	427.81	8974.17	657.45	0.86	25.31	45.50
273	6.3	41.437	52.79	4695.82	9.43	344.02	448.20	9391.65	688.03	0.86	24.13	43.33
273	8.0	52.282	66.60	5851.71	9.37	428.70	561.97	11703.43	857.39	0.86	19.13	34.13
273	10.0	64.860	82.62	7154.09	9.31	524.11	692.02	14308.19	1048.22	0.86	15.42	27.30
273	12.0	77.240	98.39	8396.14	9.24	615.10	818.03	16792.28	1230.20	0.86	12.95	22.75
273	12.5	80.304	102.30	8697.45	9.22	637.18	848.90	17394.90	1274.35	0.86	12.45	21.84
323.9	5.0	39.323	50.09	6369.42	11.28	393.30	508.53	12738.85	786.59	1.02	25.43	64.78
323.9	6.0	47.039	59.92	7572.47	11.24	467.58	606.43	15144.93	935.16	1.02	21.26	53.98
323.9	6.3	49.345	62.86	7928.90	11.23	489.59	635.56	15857.79	979.18	1.02	20.27	51.41
323.9	8.0	62.325	79.39	9910.08	11.17	611.92	798.51	19820.16	1223.84	1.02	16.05	40.49
323.9	9.0	69.893	89.04	11045.24	11.14	682.02	892.70	22090.47	1364.03	1.02	14.31	35.99
323.9	10.0	77.412	98.61	12158.34	11.10	750.75	985.67	24316.68	1501.49	1.02	12.92	32.39
323.9	12.0	92.303	117.58	14319.56	11.04	884.20	1167.96	28639.12	1768.39	1.02	10.83	26.99
323.9	12.5	95.995	122.29	14846.53	11.02	916.74	1212.78	29693.06	1833.47	1.02	10.42	25.91

Cold Formed Circular Hollow Section

AS 1163

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia constant	Torsional modulus constant	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W_{el}	W_{pl}	I_t	C_t	As	L	B/T
mm	mm	Kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
355.6	5.0	43.232	55.07	8463.58	12.40	476.02	614.64	16927.15	952.03	1.12	23.13	71.12
355.6	6.0	51.730	65.90	10070.55	12.36	566.40	733.39	20141.11	1132.80	1.12	19.33	59.27
355.6	6.3	54.270	69.13	10547.21	12.35	593.21	768.75	21094.41	1186.41	1.12	18.43	56.44
355.6	8.0	68.579	87.36	13201.37	12.29	742.48	966.78	26402.75	1484.97	1.12	14.58	44.45
355.6	10.0	85.230	108.57	16223.50	12.22	912.46	1194.73	32447.00	1824.92	1.12	11.73	35.56
355.6	12.0	101.684	129.53	19139.47	12.16	1076.46	1417.31	38278.95	2151.92	1.12	9.83	29.63
355.6	12.5	105.767	134.74	19852.18	12.14	1116.55	1472.12	39704.35	2233.09	1.12	9.45	28.45
355.6	16.0	134.001	170.70	24663.00	12.02	1387.12	1846.62	49326.00	2774.24	1.12	7.46	22.23
406.4	6.0	59.247	75.47	15128.33	14.16	744.50	961.99	30256.65	1489.01	1.28	16.88	67.73
406.4	6.3	62.163	79.19	15849.43	14.15	779.99	1008.59	31698.87	1559.98	1.28	16.09	64.51
406.4	8.0	78.601	100.13	19873.89	14.09	978.05	1269.95	39747.79	1956.09	1.28	12.72	50.80
406.4	10.0	97.758	124.53	24475.81	14.02	1204.52	1571.66	48951.63	2409.04	1.28	10.23	40.64
406.4	12.0	116.718	148.69	28937.01	13.95	1424.07	1867.19	57874.03	2848.13	1.28	8.57	33.87
406.4	12.5	121.427	154.68	30030.67	13.93	1477.89	1940.12	60061.33	2955.77	1.28	8.24	32.51
406.4	16.0	154.046	196.24	37448.82	13.81	1842.95	2439.96	74897.64	3685.91	1.28	6.49	25.40
457	6.0	66.734	85.01	21618.10	15.95	946.09	1220.48	43236.21	1892.18	1.44	14.98	76.17
457	6.3	70.024	89.20	22654.16	15.94	991.43	1279.81	45308.32	1982.86	1.44	14.28	72.54
457	8.0	88.584	112.85	28446.36	15.88	1244.92	1612.98	56892.73	2489.83	1.44	11.29	57.13
457	10.0	110.237	140.43	35091.32	15.81	1535.73	1998.42	70182.65	3071.45	1.44	9.07	45.70
457	12.0	131.692	167.76	41556.30	15.74	1818.66	2376.88	83112.60	3637.31	1.44	7.59	38.08
457	12.5	137.025	174.55	43144.80	15.72	1888.18	2470.40	86289.61	3776.35	1.44	7.30	36.56
457	16.0	174.012	221.67	53959.38	15.60	2361.46	3113.06	107918.76	4722.92	1.44	5.75	28.56