

Cold Formed Circular Hollow Sections

BS EN 10219

Designation		Weight	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Modulus	Plastic Modulus	Torsional inertia content	Torsional modulus content	Superficial Area per metre length	Nominal Length per tonne	Ratio for Local Buckling
Size	Thickness											
OD	T	M	A	I	i	W _{el}	W _{pl}	L _t	C _t	As	L	B/T
mm	mm	Kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
21.3	2.0	0.952	1.21	0.57	0.69	0.54	0.75	1.14	1.07	0.07	1050.49	10.65
21.3	2.5	1.159	1.48	0.66	0.67	0.62	0.89	1.33	1.25	0.07	862.75	8.52
21.3	3.0	1.354	1.72	0.74	0.66	0.70	1.01	1.48	1.39	0.07	738.60	7.10
26.9	2.0	1.228	1.56	1.22	0.88	0.91	1.24	2.44	1.81	0.08	814.24	13.45
26.9	2.5	1.504	1.92	1.44	0.87	1.07	1.49	2.88	2.14	0.08	664.74	10.76
26.9	3.0	1.768	2.25	1.63	0.85	1.21	1.72	3.27	2.43	0.08	565.54	8.97
33.7	2.0	1.564	1.99	2.51	1.12	1.49	2.01	5.02	2.98	0.11	639.57	16.85
33.7	2.5	1.924	2.45	3.00	1.11	1.78	2.44	6.00	3.56	0.11	519.86	13.48
33.7	3.0	2.271	2.89	3.44	1.09	2.04	2.84	6.88	4.08	0.11	440.27	11.23
42.4	2.0	1.993	2.54	5.19	1.43	2.45	3.27	10.40	4.90	0.13	501.84	21.20
42.4	2.5	2.460	3.13	6.26	1.41	2.95	3.99	12.50	5.91	0.13	406.51	16.96
42.4	3.0	2.915	3.71	7.25	1.40	3.42	4.67	14.50	6.84	0.13	343.05	14.13
42.4	4.0	3.788	4.83	8.99	1.36	4.24	5.92	18.00	8.48	0.13	263.99	10.60
48.3	2.0	2.284	2.91	7.81	1.64	3.23	4.29	15.60	6.47	0.15	437.89	24.15
48.3	2.5	2.824	3.60	9.46	1.62	3.92	5.25	18.90	7.83	0.15	354.14	19.32
48.3	3.0	3.351	4.27	11.00	1.61	4.55	6.17	22.00	9.11	0.15	298.37	16.10
48.3	4.0	4.370	5.57	13.80	1.57	5.70	7.87	27.50	11.40	0.15	228.83	12.08
48.3	5.0	5.339	6.80	16.20	1.54	6.69	9.42	32.30	13.40	0.15	187.29	9.66
60.3	2.0	2.876	3.66	15.60	2.06	5.17	6.80	31.20	10.30	0.19	347.76	30.15
60.3	2.5	3.564	4.54	19.00	2.05	6.30	8.36	38.00	12.60	0.19	280.62	24.12
60.3	3.0	4.239	5.40	22.20	2.03	7.37	9.86	44.40	14.70	0.19	235.89	20.10
60.3	4.0	5.554	7.07	28.20	2.00	9.34	12.70	56.30	18.70	0.19	180.06	15.08
60.3	5.0	6.819	8.69	33.50	1.96	11.10	15.33	67.00	22.20	0.19	146.65	12.06
76.1	2.0	3.655	4.66	32.00	2.62	8.40	10.98	64.00	16.80	0.24	273.61	38.05
76.1	2.5	4.538	5.78	39.20	2.60	10.30	13.55	78.40	20.60	0.24	220.38	30.44
76.1	3.0	5.408	6.89	46.10	2.59	12.10	16.04	92.20	24.20	0.24	184.90	25.37
76.1	4.0	7.112	9.06	59.10	2.55	15.50	20.81	118.00	31.00	0.24	140.60	19.03
76.1	5.0	8.767	11.17	70.90	2.52	18.60	25.32	142.00	37.30	0.24	114.06	15.22
76.1	6.0	10.373	13.21	81.80	2.49	21.50	29.56	164.00	43.00	0.24	96.41	12.68
76.1	6.3	10.845	13.81	84.80	2.48	22.30	30.78	170.00	44.60	0.24	92.21	12.08
88.9	2.0	4.286	5.46	51.60	3.07	11.60	15.11	103.00	23.20	0.28	233.31	44.45
88.9	2.5	5.327	6.79	63.40	3.06	14.30	18.67	127.00	28.50	0.28	187.73	35.56
88.9	3.0	6.355	8.10	74.80	3.04	16.80	22.15	150.00	33.60	0.28	157.35	29.63
88.9	4.0	8.375	10.67	96.30	3.00	21.70	28.85	193.00	43.30	0.28	119.40	22.23
88.9	5.0	10.346	13.18	116.00	2.97	26.20	35.24	233.00	52.40	0.28	96.66	17.78
88.9	6.0	12.267	15.63	135.00	2.94	30.40	41.31	270.00	60.70	0.28	81.52	14.82
88.9	6.3	12.833	16.35	140.00	2.93	31.50	43.07	280.00	63.10	0.28	77.92	14.11
101.6	2.0	4.913	6.26	77.60	3.52	15.30	19.84	155.00	30.60	0.32	203.56	50.80
101.6	2.5	6.110	7.78	95.60	3.50	18.80	24.56	191.00	37.60	0.32	163.67	40.64
101.6	3.0	7.295	9.29	113.00	3.49	22.30	29.17	226.00	44.50	0.32	137.08	33.87
101.6	4.0	9.628	12.26	146.00	3.45	28.80	38.12	293.00	57.60	0.32	103.87	25.40
101.6	5.0	11.912	15.17	177.00	3.42	34.90	46.70	355.00	69.90	0.32	83.95	20.32
101.6	6.0	14.146	18.02	207.00	3.39	40.70	54.91	413.00	81.40	0.32	70.69	16.93
101.6	6.3	14.807	18.86	215.00	3.38	42.30	57.30	430.00	84.70	0.32	67.54	16.13
114.3	2.5	6.893	8.78	137.00	3.95	24.00	31.25	275.00	48.00	0.36	145.08	45.72
114.3	3.0	8.234	10.49	163.00	3.94	28.40	37.17	325.00	56.90	0.36	121.44	38.10
114.3	4.0	10.881	13.86	211.00	3.90	36.90	48.69	422.00	73.90	0.36	91.91	28.58
114.3	5.0	13.478	17.17	257.00	3.87	45.00	59.77	514.00	89.90	0.36	74.20	22.86
114.3	6.0	16.025	20.41	300.00	3.83	52.50	70.45	600.00	105.00	0.36	62.40	19.05
114.3	6.3	16.780	21.38	313.00	3.82	54.70	73.57	625.00	109.00	0.36	59.60	18.14
114.3	8.0	20.972	26.72	379.00	3.77	66.40	90.57	759.00	133.00	0.36	47.68	14.29
139.7	3.0	10.114	12.88	301.00	4.83	43.10	56.07	602.00	86.20	0.44	98.88	46.57
139.7	4.0	13.386	17.05	393.00	4.80	56.20	73.68	786.00	112.00	0.44	74.70	34.93
139.7	5.0	16.610	21.16	481.00	4.77	68.80	90.76	961.00	138.00	0.44	60.21	27.94
139.7	6.0	19.783	25.20	564.00	4.73	80.80	107.33	1129.00	162.00	0.44	50.55	23.28
139.7	6.3	20.726	26.40	589.00	4.72	84.30	112.20	1177.00	169.00	0.44	48.25	22.17
139.7	8.0	25.983	33.10	720.00	4.66	103.00	138.93	1441.00	206.00	0.44	38.49	17.46

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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	532.00	5.85	63.30	81.98	1065.00	127.00	0.53	81.77	56.10
168.3	4.0	16.208	20.65	697.00	5.81	82.80	108.00	1394.00	166.00	0.53	61.70	42.08
168.3	5.0	20.136	25.65	856.00	5.78	102.00	133.38	1712.00	203.00	0.53	49.66	33.66
168.3	6.0	24.015	30.59	1009.00	5.74	120.00	158.12	2017.00	240.00	0.53	41.64	28.05
168.3	6.3	25.170	32.06	1053.00	5.73	125.00	165.42	2107.00	250.00	0.53	39.73	26.71
168.3	8.0	31.626	40.29	1297.00	5.67	154.00	205.74	2595.00	308.00	0.53	31.62	21.04
168.3	10.0	39.039	49.73	1564.00	5.61	186.00	250.92	3128.00	372.00	0.53	25.62	16.83
177.8	4.0	17.145	21.84	825.00	6.15	92.80	120.85	1650.00	186.00	0.56	58.33	44.45
177.8	5.0	21.308	27.14	1014.00	6.11	114.00	149.34	2028.00	228.00	0.56	46.93	35.56
177.8	6.0	25.421	32.38	1196.00	6.08	135.00	177.16	2392.00	269.00	0.56	39.34	29.63
177.8	6.3	26.646	33.94	1250.00	6.07	141.00	185.38	2499.00	281.00	0.56	37.53	28.22
177.8	8.0	33.500	42.68	1541.00	6.01	173.00	230.83	3083.00	347.00	0.56	29.85	22.23
177.8	10.0	41.382	52.72	1862.00	5.94	209.00	281.90	3724.00	419.00	0.56	24.17	17.78
177.8	12.0	49.067	62.51	2159.00	5.88	243.00	330.45	4318.00	486.00	0.56	20.38	14.82
177.8	12.5	50.957	64.91	2230.00	5.86	251.00	342.20	4460.00	502.00	0.56	19.62	14.22
193.7	4.0	18.713	23.84	1073.00	6.71	111.00	143.97	2146.00	222.00	0.61	53.44	48.43
193.7	5.0	23.268	29.64	1320.00	6.67	136.00	178.08	2640.00	273.00	0.61	42.98	38.74
193.7	6.0	27.774	35.38	1560.00	6.64	161.00	211.46	3119.00	322.00	0.61	36.01	32.28
193.7	6.3	29.116	37.09	1630.00	6.63	168.00	221.33	3260.00	337.00	0.61	34.35	30.75
193.7	8.0	36.637	46.67	2016.00	6.57	208.00	276.05	4031.00	416.00	0.61	27.29	24.21
193.7	10.0	45.303	57.71	2442.00	6.50	252.00	337.79	4883.00	504.00	0.61	22.07	19.37
193.7	12.0	53.772	68.50	2839.00	6.44	293.00	396.75	5678.00	586.00	0.61	18.60	16.14
193.7	12.5	55.858	71.16	2934.00	6.42	303.00	411.07	5869.00	606.00	0.61	17.90	15.50
219.1	4.0	21.219	27.03	1564.00	7.61	143.00	185.09	3128.00	286.00	0.69	47.13	54.78
219.1	5.0	26.400	33.63	1928.00	7.57	176.00	229.24	3856.00	352.00	0.69	37.88	43.82
219.1	6.0	31.532	40.17	2282.00	7.54	208.00	272.54	4564.00	417.00	0.69	31.71	36.52
219.1	6.3	33.062	42.12	2386.00	7.53	218.00	285.37	4772.00	436.00	0.69	30.25	34.78
219.1	8.0	41.648	53.06	2960.00	7.47	270.00	356.68	5919.00	540.00	0.69	24.01	27.39
219.1	10.0	51.567	65.69	3598.00	7.40	328.00	437.56	7197.00	657.00	0.69	19.39	21.91
219.1	12.0	61.289	78.07	4200.00	7.33	383.00	515.26	8400.00	767.00	0.69	16.32	18.26
219.1	12.5	63.688	81.13	4345.00	7.32	397.00	534.20	8689.00	793.00	0.69	15.70	17.53
244.5	5.0	29.532	37.62	2699.00	8.47	221.00	286.84	5397.00	441.00	0.77	33.86	48.90
244.5	6.0	35.291	44.96	3199.00	8.43	262.00	341.37	6397.00	523.00	0.77	28.34	40.75
244.5	6.3	37.009	47.14	3346.00	8.42	274.00	357.54	6692.00	547.00	0.77	27.02	38.81
244.5	8.0	46.660	59.44	4160.00	8.37	340.00	447.63	8321.00	681.00	0.77	21.43	30.56
244.5	10.0	57.831	73.67	5073.00	8.30	415.00	550.24	10146.00	830.00	0.77	17.29	24.45
244.5	12.0	68.806	87.65	5938.00	8.23	486.00	649.25	11877.00	972.00	0.77	14.53	20.38
244.5	12.5	71.518	91.11	6147.00	8.21	503.00	673.45	12295.00	1006.00	0.77	13.98	19.56
273	5.0	33.046	42.10	3781.00	9.48	277.00	359.16	7562.00	554.00	0.86	30.26	54.60
273	6.0	39.508	50.33	4487.00	9.44	329.00	427.81	8974.00	657.00	0.86	25.31	45.50
273	6.3	41.437	52.79	4696.00	9.43	344.00	448.20	9392.00	688.00	0.86	24.13	43.33
273	8.0	52.282	66.60	5852.00	9.37	429.00	561.97	11703.00	857.00	0.86	19.13	34.13
273	10.0	64.860	82.62	7154.00	9.31	524.00	692.02	14308.00	1048.00	0.86	15.42	27.30
273	12.0	77.240	98.39	8396.00	9.24	615.00	818.03	16792.00	1230.00	0.86	12.95	22.75
273	12.5	80.304	102.30	8697.00	9.22	637.00	848.90	17395.00	1274.00	0.86	12.45	21.84
323.9	5.0	39.323	50.09	6369.00	11.28	393.00	508.53	12739.00	787.00	1.02	25.43	64.78
323.9	6.0	47.039	59.92	7572.00	11.24	468.00	606.43	15145.00	935.00	1.02	21.26	53.98
323.9	6.3	49.345	62.86	7929.00	11.23	490.00	635.56	15858.00	979.00	1.02	20.27	51.41
323.9	8.0	62.325	79.39	9910.00	11.17	612.00	798.51	19820.00	1224.00	1.02	16.05	40.49
323.9	10.0	77.412	98.61	12158.00	11.10	751.00	985.67	24317.00	1501.00	1.02	12.92	32.39
323.9	12.0	92.303	117.58	14320.00	11.04	884.00	1167.96	28639.00	1768.00	1.02	10.83	26.99
323.9	12.5	95.995	122.29	14847.00	11.02	917.00	1212.78	29693.00	1833.00	1.02	10.42	25.91
355.6	5.0	43.232	55.07	8464.00	12.40	476.00	614.64	16927.00	952.00	1.12	23.13	71.12
355.6	6.0	51.730	65.90	10071.00	12.36	566.00	733.39	20141.00	1133.00	1.12	19.33	59.27
355.6	6.3	54.270	69.13	10547.00	12.35	593.00	768.75	21094.00	1186.00	1.12	18.43	56.44
355.6	8.0	68.579	87.36	13201.00	12.29	742.00	966.78	26403.00	1485.00	1.12	14.58	44.45
355.6	10.0	85.230	108.57	16223.00	12.22	912.00	1194.73	32447.00	1825.00	1.12	11.73	35.56
355.6	12.0	101.684	129.53	19139.00	12.16	1076.00	1417.31	38279.00	2153.00	1.12	9.83	29.63
355.6	12.5	105.767	134.74	19852.00	12.14	1117.00	1472.12	39704.00	2233.00	1.12	9.45	28.45
355.6	16.0	134.001	170.70	24663.00	12.02	1387.00	1846.62	49326.00	2774.00	1.12	7.46	22.23

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Size	Thickness											
<i>OD</i>	<i>T</i>	<i>M</i>	<i>A</i>	<i>I</i>	<i>i</i>	<i>W_{el}</i>	<i>W_{pl}</i>	<i>L_t</i>	<i>C_t</i>	<i>As</i>	<i>L</i>	<i>B/T</i>
mm	mm	Kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
406.4	6.0	59.247	75.47	15128.00	14.16	745.00	961.99	30257.00	1489.00	1.28	16.88	67.73
406.4	6.3	62.163	79.19	15849.00	14.15	780.00	1008.59	31699.00	1560.00	1.28	16.09	64.51
406.4	8.0	78.601	100.13	19874.00	14.09	978.00	1269.95	39748.00	1956.00	1.28	12.72	50.80
406.4	10.0	97.758	124.53	24476.00	14.02	1205.00	1571.66	48952.00	2409.00	1.28	10.23	40.64
406.4	12.0	116.718	148.69	28937.00	13.95	1424.00	1867.19	57874.00	2848.00	1.28	8.57	33.87
406.4	12.5	121.427	154.68	30031.00	13.93	1478.00	1940.12	60061.00	2956.00	1.28	8.24	32.51
406.4	16.0	154.046	196.24	37449.00	13.81	1843.00	2439.96	74898.00	3686.00	1.28	6.49	25.40
457	6.0	66.734	85.01	21618.00	15.95	946.00	1220.48	43236.00	1892.00	1.44	14.98	76.17
457	6.3	70.024	89.20	22654.00	15.94	991.00	1279.81	45308.00	1983.00	1.44	14.28	72.54
457	8.0	88.584	112.85	28446.00	15.88	1245.00	1612.98	56893.00	2490.00	1.44	11.29	57.13
457	10.0	110.237	140.43	35091.00	15.81	1536.00	1998.42	70183.00	3071.00	1.44	9.07	45.70
457	12.0	131.692	167.76	41556.00	15.74	1819.00	2376.88	83113.00	3637.00	1.44	7.59	38.08
457	12.5	137.025	174.55	43145.00	15.72	1888.00	2470.40	86290.00	3776.00	1.44	7.30	36.56
457	16.0	174.012	221.67	53959.00	15.60	2361.00	3113.06	107919.00	4723.00	1.44	5.75	28.56