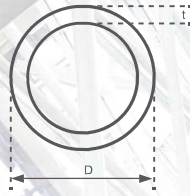




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# CARBON STEEL PIPE

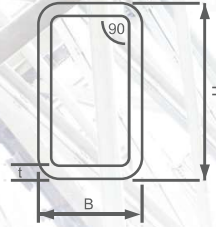
เหล็กงานโครงสร้าง

ASTM A500

MATERIAL OF GRADE	CHEMICAL COMPOSITION (%)						MECHANICAL PROPERTIES					
	C Max	Si Max	Mn Max	P Max	S Max	Cu Max	Yield Strength		Tensile Strength		Elongation,min	
							Round MPa	Sharped MPa	Round MPa	Sharped MPa	Round 2in (50.8 mm)	Shaped 2in (50.8 mm)
Grade A	0.300	-	1.400	0.045	0.045	0.18	230	270	310	310	25	25
Grade B	0.300	-	1.400	0.045	0.045	0.18	290	315	400	400	23	23
Grade C	0.270	-	1.400	0.045	0.045	0.18	315	345	425	425	21	21
Grade D	0.300	-	1.400	0.045	0.045	0.18	250	250	400	400	23	23

Nominal Size		Outside Diameter	Thickness	Weight (plain end)	Cross-sectional area	Geometrical moment of inertia	Modulus of section	Radius of gyration of area
mm	in	mm	mm	kg/m	(cm <sup>2</sup> )	(cm <sup>4</sup> )	(cm <sup>3</sup> )	(cm)
15	1/2"	21.30	2.77	1.27	1.613	0.708	0.665	0.662
20	3/4"	26.70	2.87	1.69	2.149	1.548	1.159	0.849
25	1"	33.4	2.64	2.00	2.552	3.041	1.821	1.092
			3.38	2.50	3.189	3.638	2.178	1.068
			4.55	3.24	4.126	4.399	2.634	1.033
32	1 1/4"	42.20	2.79	2.71	3.456	6.743	3.196	1.397
			3.56	3.39	4.323	8.137	3.856	1.372
			4.85	4.47	5.693	10.095	4.784	1.332
40	1 1/2"	48.30	2.90	3.25	4.138	10.705	4.433	1.608
			3.68	4.05	5.161	12.930	5.354	1.583
50	2"	60.30	3.07	4.33	5.522	22.672	7.520	2.026
			3.91	5.44	6.930	27.676	9.179	1.998
			5.54	7.48	9.534	36.104	11.975	1.946
65	2 1/2"	73.00	3.96	6.74	8.593	51.364	14.072	2.445
			4.78	8.04	10.249	59.913	16.415	2.418
			5.16	8.63	11.002	63.657	17.440	2.405
			7.01	11.41	14.539	80.031	21.926	2.346
80	3"	88.90	3.96	8.29	10.571	95.545	21.495	3.006
			4.78	9.92	12.637	112.140	25.228	2.979
			5.49	11.29	14.392	125.701	28.279	2.955
90	3 1/2"	101.60	3.96	9.53	12.152	145.053	28.554	3.455
			4.78	11.41	14.545	170.850	33.632	3.427
			5.74	13.57	17.293	199.349	39.242	3.395
100	4"	114.30	3.96	10.78	13.733	209.261	36.616	3.904
			4.78	12.91	16.453	247.155	43.247	3.876
			5.56	14.91	19.002	281.586	49.271	3.850
			6.02	16.07	20.487	301.173	52.699	3.834
125	5"	141.30	6.55	21.77	27.739	631.084	89.325	4.770
			9.53	30.97	39.467	861.079	121.880	4.671
150	6"	168.30	7.11	28.26	36.019	1172.095	139.286	5.704
			10.97	42.56	54.243	1686.484	200.414	5.576
200	8"	219.10	8.18	42.55	54.225	3019.910	275.665	7.463
			12.70	64.64	82.383	4403.608	401.972	7.311
250	10"	273.00	9.27	60.31	76.836	6688.508	490.001	9.330
			12.70	81.55	103.897	8820.505	646.191	9.214
300	12"	323.80	9.53	73.88	94.128	11631.494	718.437	11.116
			12.70	97.46	124.173	15047.403	929.426	11.008
350	14"	355.60	9.53	81.33	103.653	15529.184	873.407	12.240
			12.70	107.39	136.866	20143.557	1132.933	12.132
400	16"	406.40	9.53	93.27	118.868	23416.540	1152.389	14.036
			12.70	123.30	157.100	30478.000	1500.000	13.900

Dimension Tolerances  
Outside Diameter NPS ≤ 1 1/2" ± 0.5% OD. Not less than 0.13 mm.  
NPS ≥ 2" ± 0.75% OD.  
Thickness : ±10%



# RECTANGULAR HOLLOW SECTION STEEL PIPE

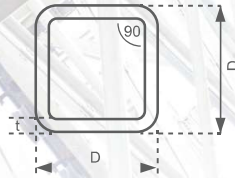
เหล็กงานโครงสร้าง

ASTM A500

MATERIAL OF GRADE	CHEMICAL COMPOSITION (%)						MECHANICAL PROPERTIES					
	C Max	Si Max	Mn Max	P Max	S Max	Cu Max	Yield Strength		Tensile Strength		Elongation,min	
							Round MPa	Sharped MPa	Round MPa	Sharped MPa	Round 2in (50.8 mm)	Shaped 2in (50.8 mm)
Grade A	0.300	-	1.400	0.045	0.045	0.18	230	270	310	310	25	25
Grade B	0.300	-	1.400	0.045	0.045	0.18	290	315	400	400	23	23
Grade C	0.270	-	1.400	0.045	0.045	0.18	315	345	425	425	21	21
Grade D	0.300	-	1.400	0.045	0.045	0.18	250	250	400	400	23	23

Nominal Size		Thickness	Weight (plain end)	Cross-sectional area	Geometrical moment of inertia		Modulus of section		Radius of gyration of area	
mm	in	mm	kg/m	(cm <sup>2</sup> )	(cm <sup>4</sup> )		(cm <sup>3</sup> )		(cm)	
				A	I <sub>x</sub>	I <sub>y</sub>	Z <sub>x</sub>	Z <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>
76.2 x 50.8	3" x 2"	3.58	6.43	8.25	63.01	33.42	16.54	13.16	2.76	2.01
		4.78	8.32	10.64	77.48	40.78	20.33	16.05	2.70	1.96
		6.35	10.56	13.13	86.86	45.72	22.80	18.00	2.57	1.87
101.6 x 50.8	4" x 2"	3.96	8.60	11.04	140.10	47.00	27.58	18.50	3.56	2.06
		4.78	10.21	13.07	161.40	53.68	31.77	21.13	3.51	2.03
		6.35	13.09	16.36	186.41	61.76	36.69	24.31	3.38	1.94
101.6 x 76.2	4" x 3"	3.96	10.24	13.05	188.08	120.47	37.02	31.62	3.80	3.04
		4.78	12.11	15.50	218.35	139.50	42.98	36.61	3.75	3.00
		6.35	16.62	19.59	259.68	165.77	51.12	43.51	3.64	2.91
127.0 x 76.2	5" x 3"	4.78	13.85	17.92	378.20	170.51	59.56	44.75	4.59	3.08
		6.35	17.89	22.81	456.23	205.22	71.85	53.86	4.47	3.00
		7.92	21.61	27.53	525.97	235.17	82.83	61.72	4.37	2.92
		9.52	25.06	31.96	581.13	258.44	91.52	67.83	4.26	2.84
152.4 x 76.2	6" x 3"	4.78	15.74	20.35	595.87	201.52	78.20	52.89	5.41	3.15
		6.35	20.42	26.04	726.36	244.68	95.32	64.22	5.28	3.07
		7.92	24.78	31.55	845.18	282.28	110.92	74.09	5.18	2.99
		9.52	28.85	36.79	943.43	312.56	123.81	82.04	5.06	2.91
152.4 x 101.6	6" x 4"	4.78	17.65	22.78	728.21	389.21	95.57	76.62	5.65	4.13
		6.35	22.94	29.26	898.49	479.51	117.91	94.39	5.54	4.05
		7.92	27.93	35.57	1055.35	561.00	138.50	110.43	5.54	3.97
		9.52	32.65	41.63	1190.62	630.55	156.25	124.12	5.35	3.89
203.2 x 101.6	8" x 4"	4.78	21.44	27.64	1475.06	503.11	145.18	99.04	7.31	4.27
		6.35	28.00	35.71	1841.61	626.05	181.26	123.24	7.18	4.19
		7.92	34.25	43.62	2185.69	737.97	215.13	145.27	7.08	4.11
		9.52	40.28	51.30	2493.58	836.30	245.43	164.63	6.97	4.04
203.2 x 152.4	8" x 6"	4.78	25.07	32.49	1953.15	1257.55	192.24	165.03	7.75	6.22
		6.35	32.80	42.17	2466.83	1587.01	242.80	208.27	7.65	6.13
		7.92	39.16	51.67	2953.25	1896.05	290.67	248.83	7.56	6.06
		9.52	47.21	60.97	3401.38	2179.36	334.78	286.01	7.47	5.98
		12.70	60.34	76.96	4006.04	2568.06	394.30	337.02	7.21	5.78
254.0 x 152.4	10" x 6"	6.35	37.85	48.62	4234.97	1931.27	333.46	253.45	9.33	6.30
		7.92	46.49	59.71	5097.46	2316.40	401.38	303.99	9.24	6.23
		9.52	54.80	70.65	5904.52	2673.74	464.92	350.88	9.14	6.15
		12.70	70.46	89.86	7068.32	3199.35	556.56	419.86	8.87	5.97

Dimension Tolerances Length of side: ≤ 63.5 mm : ±0.51 mm  
 > 63.5 mm - 88.9 mm : ±0.64 mm  
 > 88.9 mm-139.7 mm : ±0.76 mm  
 > 139.7 mm : ±1%  
 Thickness : ±10%



# SQUARE HOLLOW SECTION STEEL PIPE

เหล็กงานโครงสร้าง

ASTM A500

MATERIAL OF GRADE	CHEMICAL COMPOSITION (%)						MECHANICAL PROPERTIES					
	C Max	Si Max	Mn Max	P Max	S Max	Cu Max	Yield Strength		Tensile Strength		Elongation,min	
							Round MPa	Sharped MPa	Round MPa	Sharped MPa	Round 2in (50.8 mm)	Shaped 2in (50.8 mm)
Grade A	0.300	-	1.400	0.045	0.045	0.18	230	270	310	310	25	25
Grade B	0.300	-	1.400	0.045	0.045	0.18	290	315	400	400	23	23
Grade C	0.270	-	1.400	0.045	0.045	0.18	315	345	425	425	21	21
Grade D	0.300	-	1.400	0.045	0.045	0.18	250	250	400	400	23	23

Nominal Size		Thickness	Weight (plain end)	Cross-sectional area	Geometrical moment of inertia	Modulus of section	Radius of gyration of area
mm	in	mm	kg/m	A (cm <sup>2</sup> )	Ix , Iy (cm <sup>4</sup> )	Zx , Zy (cm <sup>3</sup> )	ix , iy (cm)
25.4 x 25.4	1" x 1"	2.41	1.62	2.07	1.75	1.38	0.92
		3.38	2.10	2.68	2.04	1.60	0.87
50.8 x 50.8	2" x 2"	2.79	4.00	5.16	19.41	7.64	1.94
		3.18	4.52	5.80	21.40	8.42	1.92
		3.91	5.44	6.94	24.67	9.71	1.89
		4.78	6.41	8.21	27.88	10.97	1.84
63.5 x 63.5	2 1/2" x 2 1/2"	3.58	6.43	8.25	48.35	15.23	2.42
		4.78	8.32	10.64	59.36	18.70	2.36
		6.35	10.56	13.13	66.84	21.05	2.26
76.2 x 76.2	3" x 3"	3.96	8.60	11.04	94.20	24.72	2.92
		4.78	10.21	13.07	108.49	28.47	2.88
		6.35	13.09	16.36	126.31	33.15	2.78
89.9 x 89.9	3 1/2" x 3 1/2"	3.96	10.24	13.05	154.44	34.74	3.44
		4.78	12.11	15.50	179.16	40.31	3.40
		6.35	15.62	19.59	213.28	47.98	3.30
		7.92	18.88	23.50	242.68	54.60	3.21
101.6 x 101.6	4" x 4"	4.78	13.85	17.92	275.30	54.19	3.92
		6.35	17.89	22.81	332.96	65.54	3.82
		7.92	21.61	27.53	384.04	75.60	3.74
127.0 x 127.0	5" x 5"	4.78	17.65	22.78	559.65	88.13	4.96
		6.35	22.94	29.26	691.23	108.86	4.86
		7.92	27.93	35.57	811.65	127.82	4.78
152.4 x 152.4	6" x 6"	4.78	21.44	27.64	992.88	130.30	5.99
		6.35	28.00	35.71	1242.75	163.09	5.90
		7.92	34.25	43.62	1475.70	193.66	5.82
		9.52	40.28	51.30	1684.99	221.13	5.73
177.8 x 177.8	7" x 7"	4.78	25.07	32.49	1606.30	180.69	7.03
		6.35	32.80	42.17	2029.15	228.25	6.94
		7.92	39.16	51.67	2428.12	273.13	6.86
203.2 x 203.2	8" x 8"	6.35	37.85	48.62	3092.04	304.33	7.97
		7.92	46.49	59.71	3720.81	366.22	7.89
		9.52	54.80	70.65	4309.18	424.13	7.81
		12.70	70.46	89.86	5178.43	509.69	7.59
254.0 x 254.0	10" x 10"	6.35	47.96	61.52	6213.81	489.28	10.05
		7.92	59.13	75.81	7534.67	593.28	9.97
		9.52	69.98	89.99	8796.58	692.64	9.89
		12.70	90.69	115.67	10828.27	852.62	9.68

Dimension Tolerances

Length of side : ≤ 63.5 mm : ±0.51 mm  
 ≤ 88.9 mm : ±0.64 mm  
 > 88.9 mm-139.7 mm : ±0.76 mm  
 > 139.7 mm : ±1%

Thickness : ±10%