

Carbon Steel Round Pipe for General Structure

ท่อเหล็กกลม สำหรับงานโครงสร้าง

ASTM A500

Grade	% Chemical Composition (Max)						Mechanical Properties (Min)		
	C	Si	Mn	P	S	Cu	Yield Strength	Tensile Strength	Elongation
							Round	Round	Round
MPa	MPa	%							
Grade A	0.30	-	1.40	0.045	0.045	0.18	230	310	25
Grade B	0.30	-	1.40	0.045	0.045	0.18	290	400	23
Grade C	0.27	-	1.40	0.045	0.045	0.18	315	425	21
Grade D	0.30	-	1.40	0.045	0.045	0.18	250	400	23

Nominal Size		Outside Diameter	Thickness	Weight	Cross Sectional Area A	Geometrical Moment of Inertia I	Modulus of Section Z	Radius of Gyration i
mm	inch	mm	mm	kg/m	cm ²	cm ⁴	cm ³	cm
15	1/2"	21.30	2.77	1.27	1.618	0.708	0.664	0.661
20	3/4"	26.70	2.87	1.69	2.148	1.547	1.159	0.849
25	1"	33.40	2.64	2.00	2.551	3.040	1.820	1.092
			3.38	2.50	3.188	3.636	2.178	1.068
			4.55	3.24	4.124	4.397	2.633	1.033
32	1 1/4"	42.20	2.79	2.71	3.454	6.740	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	Thickness	Length
	NPS ≤ 1½ in : ±0.5% NPS ≥ 2 in : ±0.75%	±10 % of wall thickness	≤6.5 m : -6 mm, +13 mm >6.5 m : -6 mm, +19 mm

Carbon Steel Square Pipe for General Structure

ท่อเหลี่ยมรูปสี่เหลี่ยมจัตุรัส สำหรับงานโครงสร้าง

Grade	% Chemical Composition (Max)						Mechanical Properties (Min)		
	C	Si	Mn	P	S	Cu	Yield Strength	Tensile Strength	Elongation
							Shaped	Shaped	Shaped
MPa	MPa	%							
Grade A	0.30	-	1.40	0.045	0.045	0.18	270	310	25
Grade B	0.30	-	1.40	0.045	0.045	0.18	315	400	23
Grade C	0.27	-	1.40	0.045	0.045	0.18	345	425	21
Grade D	0.30	-	1.40	0.045	0.045	0.18	250	400	23

Nominal Size		Thickness	Weight	Cross Sectional Area A	Geometrical Moment of Inertia Ix , Iy	Modulus of Section Zx , Zy	Radius of Gyration ix , iy
mm	inch	mm	kg/m	cm ²	cm ⁴	cm ³	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	Outside Flat Dimension	Thickness	Length
	DN ≤ 2 1/2 in (65 mm) : ±0.020 in (0.50 mm) 2 1/2 in < DN ≤ 3 1/2 in (65-90mm) : ±0.025 in (0.60 mm) 3 1/2 in < DN ≤ 5 1/2 in (90-140 mm) : ±0.030 in (0.80 mm) 5 1/2 in (140 mm) < DN : 0.01 time large flat dimension	±10 % of wall thickness	≤6.5 m : -6 mm , +13 mm >6.5 m : -6 mm , +19 mm

Carbon Steel Rectangular Pipe for General Structure

ท่อเหล็กรูปสี่เหลี่ยมผืนผ้า สำหรับงานโครงสร้าง

ASTM A500

Grade	% Chemical Composition (Max)						Mechanical Properties (Min)		
	C	Si	Mn	P	S	Cu	Yield Strength	Tensile Strength	Elongation
							Shaped	Shaped	Shaped
							MPa	MPa	%
Grade A	0.30	-	1.40	0.045	0.045	0.18	270	310	25
Grade B	0.30	-	1.40	0.045	0.045	0.18	315	400	23
Grade C	0.27	-	1.40	0.045	0.045	0.18	345	425	21
Grade D	0.30	-	1.40	0.045	0.045	0.18	250	400	23

Nominal Size		Thickness	Weight	Cross Sectional Area A	Geometrical Moment of Inertia		Modulus of Section		Radius of Gyration	
mm	inch				I _x	I _y	Z _x	Z _y	i _x	i _y
		mm	kg/m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm
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	15.62	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	Outside Flat Dimension	Thickness	Length
	DN ≤ 2 ½ in (65 mm) : ±0.020 in (0.50 mm) 2 ½ in < DN ≤ 3 1/2 in (65-90mm) : ±0.025 in (0.60 mm) 3 ½ in < DN ≤ 5 1/2 in (90-140 mm) : ±0.030 in (0.80 mm) 5 ½ in (140 mm) < DN : 0.01 time large flat dimension	±10 % of wall thickness	≤6.5 m : -6 mm , +13 mm >6.5 m : -6 mm , +19 mm