

CARBON STEEL PIPE

เหล็กงานโครงสร้าง

 AS 1163

GRADES	CHEMICAL COMPOSITION (CAST OR PRODUCT ANALYSIS) % MAX							MECHANICAL PROPERTIES			
	C	Si	Mn	P	S	Al	CE	Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hollow Sections
C250, C250LO	0.120	0.050	0.500	0.030	0.030	0.10	0.250	250	320	22	18
C350, C350LO	0.200	0.450	1.600	0.030	0.030	0.10	0.430	350	430	20	16
C450, C450LO	0.200	0.450	1.700	0.030	0.030	0.10	0.430	450	500	16	14

C250

Nominal Dimension		Outside Diameter	Thickness	Mass per unit length	Cross Sectional Area	Geo-metrical moment of inertia	Modulus of section	Radius of gyration
mm	in	mm	mm	kg/m	mm ²	10 ⁶ mm ⁴	10 ³ mm ³	mm
15	1/2"	21.30	2.60	1.20	153	0.007	0.639	6.68
		21.30	3.20	1.43	182	0.008	0.722	6.50
20	3/4"	26.90	2.60	1.56	198	0.015	1.100	8.64
		26.90	3.20	1.87	238	0.017	1.270	8.46
25	1"	33.70	3.20	2.41	307	0.036	2.140	10.80
		33.70	4.00	2.93	373	0.042	2.490	10.60
32	1 1/4"	42.40	3.20	3.09	394	0.076	3.590	13.90
		42.40	4.00	3.79	483	0.090	4.240	13.60
40	1 1/2"	48.30	3.20	3.56	453	0.116	4.800	16.00
		48.30	4.00	4.37	557	0.138	5.700	15.70
		48.30	5.40	5.71	728	0.170	7.040	15.30
50	2"	60.30	3.60	5.03	641	0.259	8.580	20.10
		60.30	4.50	6.19	789	0.309	10.2	19.80
		60.30	5.40	7.31	931	0.354	11.8	19.50
65	2 1/2"	76.10	3.60	6.44	820	0.540	14.21	25.70
		76.10	4.50	7.95	1010	0.651	17.10	25.40
		76.10	5.90	10.20	1300	0.807	21.20	24.90
80	3"	88.90	4.00	8.38	1070	0.963	21.70	30.00
		88.90	5.00	10.30	1320	1.160	26.20	29.70
		88.90	5.90	12.10	1540	1.330	30.00	29.40
90	3 1/2"	101.60	4.00	9.63	1230	1.460	28.80	34.50
		101.60	5.00	11.90	1520	1.770	34.90	34.20
100	4"	114.30	4.50	12.20	1550	2.340	41.00	38.90
		114.30	5.40	14.50	1850	2.750	48.00	38.50
125	5"	139.70	5.00	16.60	2120	4.810	68.80	47.70
		139.70	5.40	17.90	2280	5.140	73.70	47.50
150	6"	165.10	5.00	19.70	2510	8.070	97.70	56.60
		165.10	5.40	21.30	2710	8.650	105.00	56.50

Dimension Tolerances

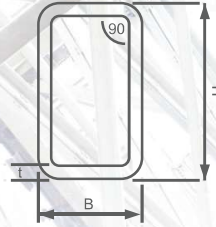
Outside Diameter: ±1% with a minimum of ± 0.5 mm.
and a maximum of ± 10 mm.

Thickness : ±10%

Weight : -4%

C350

Nominal Dimension		Outside Diameter	Thickness	Mass per unit length	Cross Sectional Area	Geo-metrical moment of inertia	Modulus of section	Radius of gyration		
mm	in	mm	mm	kg/m	mm ²	10 ⁶ mm ⁴	10 ³ mm ³	mm		
15	1/2"	21.30	2.00	0.95	121	0.006	0.536	6.86		
		20	3/4"	26.90	2.00	1.23	156	0.012	0.907	8.83
20	3/4"	26.90	2.30	1.40	178	0.014	1.01	8.7		
		25	1"	33.70	2.00	1.56	199	0.025	1.49	11.2
25	1"	33.70	2.60	1.99	254	0.031	1.84	11.0		
		32	1 1/4"	42.40	2.00	1.99	254	0.052	2.45	14.3
32	1 1/4"	42.40	2.60	2.55	325	0.065	3.05	14.1		
		40	1 1/2"	48.30	2.30	2.61	332	0.088	3.65	16.3
40	1 1/2"	48.30	2.90	3.25	414	0.107	4.43	16.1		
		50	2"	60.30	2.30	3.29	419	0.177	5.85	20.5
		60.30	2.90	4.11	523	0.216	7.16	20.3		
65	2 1/2"	76.10	2.30	4.19	533	0.363	9.55	26.1		
		76.10	3.20	5.75	733	0.488	12.8	25.8		
		80	3"	88.90	2.60	5.53	705	0.657	14.8	30.5
80	3"	88.90	3.20	6.76	862	0.792	17.8	30.3		
		88.90	4.80	9.96	1270	1.12	25.3	29.8		
		88.90	5.50	11.30	1440	1.26	28.3	29.6		
90	3 1/2"	101.60	2.60	6.35	809	0.991	19.5	35.0		
		101.60	3.20	7.77	989	1.20	23.6	34.8		
		100	4"	114.30	3.20	8.77	1120	1.72	30.2	39.3
100	4"	114.30	3.60	9.83	1250	1.92	33.6	39.2		
		114.30	4.80	13.00	1650	2.48	43.4	38.8		
		125	5"	139.70	3.00	10.10	1290	3.01	43.1	48.3
125	5"	139.70	3.50	11.80	1500	3.47	49.7	48.2		
		150	6"	165.10	3.00	12.00	1530	5.02	60.8	57.3
		165.10	3.50	13.90	1780	5.80	70.30	57.1		
150	6"	168.30	4.80	19.40	2470	8.25	98	57.8		
		168.30	6.40	25.60	3260	10.7	127	57.3		
		168.30	7.10	28.20	3600	11.7	139	57		
200	8"	219.10	4.80	25.40	3230	18.6	169	75.8		
		219.10	6.40	33.60	4280	24.2	221	75.2		
		219.10	8.20	42.60	5430	30.3	276	74.6		
250	10"	273.10	4.80	31.80	4050	36.4	346	94.9		
		273.10	6.40	42.10	5360	47.7	349	94.3		
		273.10	9.30	60.50	7710	67.1	492	93.3		
300	12"	323.90	6.40	50.10	6380	80.5	497	112		
		323.90	9.50	73.70	9380	116	717	111		
350	14"	355.60	6.40	55.10	7020	107	602	123		
		355.60	9.50	81.10	10300	155	871	122		
400	16"	406.40	6.40	63.10	8040	161	792	141		
		406.40	9.50	93.00	11800	233	1150	140		



RECTANGULAR HOLLOW SECTION STEEL PIPE

เหล็กงานโครงสร้าง

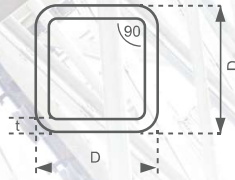
 AS 1163

GRADES	CHEMICAL COMPOSITION (CAST OR PRODUCT ANALYSIS) % MAX							MECHANICAL PROPERTIES			
	C	Si	Mn	P	S	Al	CE	Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hollow Sections
C250, C250L0	0.120	0.050	0.500	0.030	0.030	0.10	0.250	250	320	22	18
C350, C350L0	0.200	0.450	1.600	0.030	0.030	0.10	0.430	350	430	20	16
C450, C450L0	0.200	0.450	1.700	0.030	0.030	0.10	0.430	450	500	16	14

C350

C450

Nominal Size		Thick-ness	Mass per unit length	Cross Sectional Area	Geometrical moment of inertia		Modulus of section		Radius of gyration		Nominal Size		Thick-ness	Mass per unit length	Cross Sectional Area	Geometrical moment of inertia		Modulus of section		Radius of gyration			
mm	in	mm	kg/m	mm ²	I _x (10 ⁵ mm ⁴)	I _y (10 ⁶ mm ⁴)	Z _x (10 ³ mm ³)	Z _y (10 ³ mm ³)	i _x (mm)	i _y (mm)	mm	in	mm	kg/m	mm ²	I _x (10 ⁶ mm ⁴)	I _y (10 ⁶ mm ⁴)	Z _x (10 ³ mm ³)	Z _y (10 ³ mm ³)	i _x (mm)	i _y (mm)		
50 x 20	2" x 3/4"	1.60	1.63	207	0.061	0.014	2.43	1.42	17.1	8.29	50 x 20	2" x 3/4"	2.30	2.25	287	0.080	0.018	3.20	1.83	16.7	7.98		
		2.00	1.99	254	0.072	0.017	2.89	1.67	16.9	8.11			2.80	2.67	340	0.091	0.021	3.65	2.05	16.4	7.76		
		2.50	2.42	309	0.085	0.019	3.39	1.92	16.6	7.89			50 x 25	2" x 1"	2.30	2.44	310	0.093	0.031	3.72	2.48	17.3	10
		3.00	2.83	361	0.095	0.021	3.81	2.12	16.2	7.67					2.80	2.89	368	0.107	0.035	4.27	2.82	17	9.78
50 x 25	2" x 1"	1.60	1.75	223	0.070	0.024	2.81	1.9	17.7	10.3	65 x 35	2 1/2" x 1 3/8"	2.30	3.34	425	0.229	0.087	7.04	4.96	23.2	14.3		
		2.00	2.15	274	0.084	0.028	3.35	2.25	17.5	10.1			2.80	3.99	508	0.267	0.101	8.21	5.75	22.9	14.1		
		2.50	2.62	334	0.099	0.033	3.95	2.62	17.2	9.91			75 x 50	3" x 2"	2.30	4.24	540	0.419	0.224	11.2	8.96	27.9	20.4
3.00	3.07	391	0.112	0.037	4.47	2.93	16.9	9.69	2.80	5.09	648	0.493			0.263	13.2	10.5	27.6	20.1				
65 x 35	2 1/2" x 1 3/8"	2.00	2.93	374	0.204	0.078	6.28	4.44	23.4	14.4	100 x 50	4" x 2"	2.30	5.14	655	0.848	0.29	17	11.6	36	21		
		2.50	3.60	459	0.244	0.093	7.52	5.29	23.1	14.2			2.80	6.19	788	1.00	0.341	20.1	13.6	35.7	20.8		
		3.00	4.25	541	0.281	0.106	8.65	6.04	22.8	14.0			3.30	7.14	909	1.13	0.383	22.6	15.3	35.2	20.5		
75 x 25	3" x 1"	1.60	2.38	303	0.197	0.035	5.26	2.78	25.5	10.7	125 x 75	5" x 3"	2.80	8.39	1070	2.29	1.04	36.6	27.8	46.2	31.2		
		2.00	2.93	374	0.238	0.041	6.36	3.31	25.3	10.5			3.30	9.73	1240	2.60	1.19	41.6	31.6	45.8	30.9		
		2.50	3.60	459	0.285	0.049	7.60	3.89	24.9	10.3			3.80	11.10	1410	2.93	1.33	46.8	35.5	45.5	30.7		
75 x 50	3" x 2"	2.00	3.72	474	0.372	0.199	9.91	7.96	28	20.5	Dimension Tolerances Outside Diameter: ±1%, with minimum of ±0.5 mm. Thickness : ±10% Weight : -4%												
		2.50	4.58	584	0.450	0.240	12.0	9.60	27.7	20.3													
		3.00	5.42	691	0.522	0.278	13.9	11.1	27.5	20.0													
		4.00	6.92	881	0.630	0.335	16.8	13.4	26.7	19.5													
100 x 50	4" x 2"	2.00	4.50	574	0.750	0.257	15.0	10.3	36.2	21.2													
		2.50	5.56	709	0.912	0.311	18.2	12.4	35.9	20.9													
		3.00	6.60	841	1.06	0.361	21.3	14.4	35.6	20.7													
		3.50	7.53	959	1.18	0.400	23.6	16.0	35.1	20.4													
		4.00	8.49	1080	1.31	0.441	26.1	17.6	34.8	20.2													
		5.00	10.30	1310	1.53	0.511	30.6	20.4	34.1	19.7													
125 x 75	5" x 3"	3.00	8.96	1140	2.43	1.11	38.9	29.5	46.1	31.1													
		4.00	11.60	1480	3.05	1.39	48.9	37	45.4	30.6													
		5.00	14.20	1810	3.64	1.65	58.3	43.9	44.8	30.1													
150 x 50	6" x 2"	3.00	8.96	1140	2.99	0.526	39.8	21.1	51.2	21.5													
		4.00	11.60	1480	3.74	0.653	49.8	26.1	50.2	21.0													
		5.00	14.20	1810	4.44	0.765	59.2	30.6	49.5	20.5													
150 x 100	6" x 4"	4.00	14.80	1880	5.87	3.15	78.2	63.0	55.9	40.9													
		5.00	18.20	2310	7.07	3.79	94.3	75.7	55.3	40.4													
		6.00	21.40	2730	8.17	4.36	109	87.3	54.7	40.0													
200 x 100	8" x 4"	4.00	17.90	2280	11.9	4.07	119	81.5	72.1	42.3													
		5.00	22.10	2810	14.4	4.92	144	98.3	71.5	41.8													
		6.00	26.20	3330	16.7	5.69	167	114	70.8	41.3													
		9.00	37.70	4800	22.8	7.64	228	153	68.9	39.9													
250 x 150	10" x 6"	5.00	29.90	3810	32.7	15.0	262	199	92.6	62.6													
		6.00	35.60	4530	38.4	17.5	307	233	92.0	62.2													
		9.00	51.80	6600	53.7	24.3	430	324	90.2	60.7													



SQUARE HOLLOW SECTION STEEL PIPE

เหล็กงานโครงสร้าง

 AS 1163

GRADES	CHEMICAL COMPOSITION (CAST OR PRODUCT ANALYSIS) % MAX							MECHANICAL PROPERTIES			
	C	Si	Mn	P	S	Al	CE	Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hol - low Sections
C250, C250L0	0.120	0.050	0.500	0.030	0.030	0.10	0.250	250	320	22	18
C350, C350L0	0.200	0.450	1.600	0.030	0.030	0.10	0.430	350	430	20	16
C450, C450L0	0.200	0.450	1.700	0.030	0.030	0.10	0.430	450	500	16	14

C350

Nominal Size		Thickness	Mass per unit length	Cross Sectional Area	Geo - metrical moment of inertia (10^6 mm^4)	Modulus of section (10^3 mm^3)	Radius of gyration (mm)	Nominal Size		Thickness	Mass per unit length	Cross Sectional Area	Geo - metrical moment of inertia (10^6 mm^4)	Modulus of section (10^3 mm^3)	Radius of gyration (mm)				
mm	in	mm	kg/m	mm ²	Ix,Iy	Zx,Zy	ix,iy	mm	in	mm	kg/m	mm ²	Ix,Iy	Zx,Zy	ix,iy				
20 x 20	3/4" x 3/4"	1.60	0.87	111	0.006	0.608	7.39	125 x 125	5" x 5"	4.00	14.80	1880	4.52	72.3	49.0				
25 x 25	1" x 1"	1.60	1.12	143	0.013	1.02	9.44	125 x 125	5" x 5"	5.00	18.20	2310	5.44	87.1	48.5				
		2.00	1.36	174	0.015	1.19	9.24			6.00	21.40	2730	6.29	101	48.0				
		2.50	1.64	209	0.017	1.35	8.99			9.00	30.60	3900	8.38	134	46.4				
		3.00	1.89	241	0.018	1.47	8.74			150 x 150	6" x 6"	5.00	22.10	2810	9.70	129	58.7		
30 x 30	1 1/8" x 1 1/8"	1.60	1.38	175	0.023	1.54	11.5	150 x 150	6" x 6"	6.00	26.20	3330	11.3	150	58.2				
		2.00	1.68	214	0.027	1.81	11.3			9.00	37.70	4800	15.4	205	56.6				
		2.50	2.00	254	0.038	2.16	13.5			200 x 200	8" x 8"	5.00	29.90	3810	23.9	239	79.1		
35 x 35	1 3/8" x 1 3/8"	2.00	1.99	254	0.045	2.58	13.3	200 x 200	8" x 8"	6.00	35.60	4530	28.0	280	78.6				
		2.50	2.42	309	0.053	3.02	13.1			9.00	51.80	6600	39.2	392	77.1				
		3.00	2.83	361	0.060	3.4	12.8			250 x 250	10" x 10"	6.00	45.00	5730	56.2	450	99.0		
		4.00	3.54	441	0.070	4.0	12.5			9.00	65.90	8400	79.8	639	97.5				
40 x 40	1 1/2" x 1 1/2"	1.60	1.88	239	0.058	2.9	15.6	250 x 250	10" x 10"	9.00	65.90	8400	79.8	639	97.5				
		2.00	2.31	294	0.069	3.47	15.4			C450	Nominal Size	Thickness	Mass per unit length	Cross Sectional Area	Geo - metrical moment of inertia (10^6 mm^4)	Modulus of section (10^3 mm^3)	Radius of gyration (mm)		
		2.50	2.82	359	0.082	4.11	15.1												
		4.00	4.09	521	0.105	5.26	14.2												
50 x 50	2" x 2"	1.60	2.38	303	0.117	4.68	19.6	25 x 25	1" x 1"									2.30	1.53
65 x 65	2 1/2" x 2 1/2"	2.00	3.88	494	0.323	9.94	25.6	35 x 35	1 3/8" x 1 3/8"	2.30	2.25	287	0.050	2.85	13.20				
		2.50	4.78	609	0.391	12.0	25.3			2.80	2.67	340	0.057	3.26	12.90				
		3.00	5.66	721	0.454	14.0	25.1			50 x 50	2" x 2"	2.30	3.34	425	0.159	6.34	19.30		
75 x 75	3" x 3"	2.50	5.56	709	0.614	16.4	29.4	50 x 50	2" x 2"	2.80	3.99	508	0.185	7.40	19.10				
		3.00	6.60	841	0.716	19.1	29.2			65 x 65	2 1/2" x 2 1/2"	2.30	4.42	563	0.364	11.2	25.40		
		3.50	7.53	959	0.797	21.3	28.8					75 x 75	3" x 3"	2.30	5.14	655	0.571	15.2	29.50
		4.00	8.49	1080	0.882	23.5	28.6							2.80	6.19	788	0.676	18	29.30
5.00	10.30	1310	1.03	27.5	28.0	3.30	7.14	909	0.761					20.3	28.90				
6.00	12.00	1530	1.16	30.9	27.5	100 x 100	4" x 4"	2.80	8.39	1070	1.670			33.3	39.50				
89 x 89	3 1/2" x 3 1/2"	3.50	9.06	1150	1.37	30.9	34.5	100 x 100	4" x 4"	3.30	9.73	1240	1.900	38	39.20				
		5.00	12.50	1590	1.81	40.7	33.7			3.80	11.10	1410	2.140	42.7	38.90				
		6.00	14.60	1870	2.06	46.2	33.2			Dimension Tolerances	Outside Diameter: $\pm 1\%$, with minimum of $\pm 0.5 \text{ mm}$.	Thickness : $\pm 10\%$	Weight : -4%						
		9.00	23.50	3000	3.91	78.1	36.1												

Dimension Tolerances
Outside Diameter: $\pm 1\%$, with minimum of $\pm 0.5 \text{ mm}$.
Thickness : $\pm 10\%$
Weight : -4%