

Carbon Steel Pressure Pipes

ท่อเหล็กกล้าคาร์บอนชนิดทนความดัน



ส่วนประกอบทางเคมี / คุณสมบัติทางกล

Chemical Composition										
Grade	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V
A	≤0.25	-	≤0.95	≤0.050	≤0.045	≤0.40	≤0.40	≤0.40	≤0.15	≤0.08
B	≤0.30	-	≤1.20	≤0.050	≤0.045	≤0.40	≤0.40	≤0.40	≤0.15	≤0.08
STPG370	≤0.29	≤0.40	0.27-0.94	≤0.050	≤0.050	-	-	-	-	-
STPG410	≤0.34	≤0.40	0.27-1.04	≤0.050	≤0.050	-	-	-	-	-
S195T	≤0.20	-	≤1.40	≤0.035	≤0.030	-	-	-	-	-

Mechanical Properties				
Grade	Tensile (MPa)	Yield (MPa)	Bending Angle	Inside Radius
A	≥330	≥205	90	6×OD (DN≤50)
B	≥415	≥240	90	6×OD (DN≤50)
STPG370	≥370	≥215	90	6×OD (DN≤40)
STPG410	≥410	≥245	90	6×OD (DN≤40)
S195T	320-520	≥195	90	See Table 7

Note:

- ผลรวมของธาตุทองแดง นิกเกิล โครเมียม โมลิบดีนัม วานาเดียม ต้องไม่เกิน 1.00%
- หากปริมาณธาตุคาร์บอนต่ำกว่าค่าสูงสุดที่กำหนดไว้ทุก ๆ 0.01% ยอมให้เพิ่มปริมาณธาตุแมงกานีส สูงกว่าค่าสูงสุดได้อีก 0.06% ทั้งนี้ค่าสูงสุดต้องไม่เกิน 1.35%
- หากปริมาณธาตุคาร์บอนต่ำกว่าค่าสูงสุดที่กำหนดไว้ทุก ๆ 0.01% ยอมให้เพิ่มปริมาณธาตุแมงกานีส สูงกว่าค่าสูงสุดได้อีก 0.06% ทั้งนี้ค่าสูงสุดต้องไม่เกิน 1.65%

TIS 276-2562 Table 4: Elongation for Pipe with Symbol of Grades A and B

Pipe Size				Elongation	
Cross Section	Thickness			Grade	
mm ²	Test Piece 12A (mm)	Test Piece 12B (mm)	Test Piece 12C (mm)	A (%)	B (%)
≥500	≥26.3	≥20.0	≥13.2	≥36	≥30
480-499	25.3-26.2	19.2-19.9	12.7-13.1	≥36	≥30
460-479	24.2-25.2	18.4-19.1	12.1-12.6	≥36	≥29
440-459	23.2-24.1	17.6-18.3	11.6-12.0	≥36	≥29
420-439	21.1-23.1	16.8-17.5	11.1-11.5	≥35	≥29
400-419	21.1-22.0	16.0-16.7	10.6-11.0	≥35	≥29
380-399	20.0-21.0	15.2-15.9	10.0-10.5	≥35	≥28
360-379	19.0-19.9	14.4-15.1	9.5-9.9	≥34	≥28
340-359	17.9-18.9	13.6-14.3	9.0-9.4	≥34	≥28
320-339	16.9-17.8	12.8-13.5	8.5-8.9	≥34	≥27
300-319	15.8-16.8	12.0-12.7	7.9-8.4	≥33	≥27
280-299	14.8-15.7	11.2-11.9	7.4-7.8	≥33	≥27
260-279	13.7-14.7	10.4-11.1	6.9-7.3	≥32	≥26
240-259	12.7-13.6	9.6-10.3	6.3-6.8	≥32	≥26
220-239	11.6-12.6	8.8-9.5	5.8-6.2	≥32	≥26
200-219	10.5-11.5	8.0-8.7	5.3-5.7	≥31	≥25
190-199	10.0-10.4	7.6-7.9	5.0-5.2	≥30	≥25
180-189	9.5-9.9	7.2-7.5	4.8-4.9	≥30	≥24
170-179	9.0-9.4	6.8-7.1	4.5-4.7	≥30	≥24
160-169	8.4-8.9	6.4-6.7	4.2-4.4	≥29	≥24
150-159	7.9-8.3	6.0-6.3	4.0-4.1	≥29	≥24
140-149	7.4-7.8	5.6-5.9	3.7-3.9	≥29	≥23
130-139	6.9-7.3	5.2-5.5	3.5-3.6	≥28	≥23
120-129	6.3-6.8	4.8-5.1	3.2-3.4	≥28	≥23
110-119	5.8-6.2	4.4-4.7	2.9-3.1	≥27	≥22
100-109	5.3-5.7	4.0-4.3	2.7-2.8	≥27	≥22
90-99	4.8-5.2	3.6-3.9	2.4-2.6	≥26	≥21
80-89	4.2-4.7	3.2-3.5	2.1-2.3	≥26	≥21
70-79	3.7-4.1	2.8-3.1	1.9-2.0	≥25	≥21
60-69	3.2-3.6	2.4-2.7	1.6-1.8	≥24	≥20
50-59	2.7-3.1	2.0-2.3	-	≥23	≥20
40-49	2.1-2.6	1.6-1.9	-	≥22	≥19
30-39	1.6-2.0	-	-	≥22	≥18



Rectangular Tubes (ASTM A500)

ท่อเหล็กสี่เหลี่ยมผืนผ้า สำหรับงานโครงสร้าง

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
76.2×50.8	3.58	6.43	38.58
	4.78	8.32	49.92
	6.35	10.56	63.36
101.6×50.8	3.96	8.60	51.60
	3.96	10.24	61.44
	4.78	12.11	72.66
	6.35	15.62	93.72
	7.92	18.88	113.28
101.6×76.2	3.96	10.24	61.44
	4.78	12.11	72.66
	6.35	15.62	93.72
	7.92	18.88	113.28
127.0×76.2	4.78	13.85	83.10
	6.35	17.89	107.34
	7.92	21.61	129.66
	9.52	25.06	150.36
152.4×76.2	4.78	15.74	94.44
	6.35	20.42	122.52
	7.92	24.78	148.68
152.4×101.6	4.78	17.65	105.90
	6.35	22.94	137.64
	7.92	27.93	167.58
	9.52	32.65	195.90
	12.70	41.19	247.14
177.8×127.0	4.78	21.44	128.64
	6.35	28.00	168.00
	7.92	34.25	205.50
	9.52	40.28	241.68
	12.70	51.31	307.86
203.2×101.6	4.78	21.44	128.64
	6.35	28.00	168.00
	7.92	34.25	205.50
	9.52	40.28	241.68
	12.70	51.31	307.86

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
203.2×152.4	4.78	25.07	150.42
	6.35	32.80	196.80
	7.92	39.16	234.96
	9.52	47.21	283.26
	12.70	60.34	362.04
254.0×101.6	12.70	63.02	378.12
	16.00	76.81	460.86
254.0×152.4	6.35	37.85	227.10
	7.92	46.49	278.94
	9.52	54.80	328.80
	12.70	70.46	422.76
	16.00	89.57	537.42
304.8×203.2	12.70	93.41	560.46
	16.00	115.10	690.60
	12.70	113.70	682.20
	16.00	140.60	843.60
457.2×254.0	12.70	133.92	803.52
	16.00	166.14	996.84
508.0×304.8	12.70	154.18	925.08
	16.00	191.66	1149.96
550.0×350.0	12.00	160.19	961.14
	16.00	209.42	1256.52
	19.00	244.97	1469.82
	22.00	279.36	1676.16
	25.00	312.57	1875.42
	28.00	344.61	2067.66
600.0×400.0	12.00	179.03	1074.18
	16.00	234.54	1407.24
	19.00	274.80	1648.80
	22.00	313.90	1883.40
	25.00	351.82	2110.92
	28.00	388.57	2331.42
	32.00	435.75	2614.50
	36.00	480.84	2885.04
	40.00	523.85	3143.10



Rectangular Tubes (BS EN 10219)

ท่อเหล็กสี่เหลี่ยมผืนผ้า สำหรับงานโครงสร้าง

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
40x20	2.00	1.68	10.08
	2.50	2.03	12.18
	3.00	2.36	14.16
50x30	2.00	2.31	13.86
	2.50	2.82	16.92
	3.00	3.30	19.80
	4.00	4.20	25.20
60x40	2.00	2.93	17.58
	2.50	3.60	21.60
	3.00	4.25	25.50
	4.00	5.45	32.70
	5.00	6.56	39.36
70x50	2.00	3.56	21.36
	2.50	4.39	26.34
	3.00	5.19	31.14
	4.00	6.71	40.26
	5.00	8.13	48.78
80x40	2.00	3.56	21.36
	2.50	4.39	26.34
	3.00	5.19	31.14
	4.00	6.71	40.26
80x60	2.00	4.19	25.14
	2.50	5.17	31.02
	3.00	6.13	36.78
	4.00	7.97	47.82
	5.00	9.70	58.20
90x50	2.00	4.19	25.14
	2.50	5.17	31.02
	3.00	6.13	36.78
	4.00	7.97	47.82
	5.00	9.70	58.20
100x40	2.50	5.17	31.02
	3.00	6.13	36.78
	4.00	7.97	47.82
	5.00	9.70	58.20

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
100x50	2.50	5.56	33.36
	3.00	6.60	39.60
	4.00	8.59	51.54
	5.00	10.50	63.00
	6.00	12.30	73.80
	6.30	12.50	75.00
100x60	2.50	5.96	35.76
	3.00	7.07	42.42
	4.00	9.22	55.32
	5.00	11.30	67.80
	6.00	13.20	79.20
	6.30	13.50	81.00
100x80	2.50	6.74	40.44
	3.00	8.01	48.06
	4.00	10.50	63.00
	5.00	12.80	76.80
	6.00	15.10	90.60
	6.30	15.50	93.00
120x60	2.50	6.74	40.44
	3.00	8.01	48.06
	4.00	10.50	63.00
	5.00	12.80	76.80
	6.00	15.10	90.60
	6.30	15.50	93.00
	8.00	18.90	113.40
	8.00	18.90	113.40
120x80	3.00	8.96	53.76
	4.00	11.70	70.20
	5.00	14.40	86.40
	6.00	17.00	102.00
	6.30	17.50	105.00
140x80	4.00	13.00	78.00
	5.00	16.00	96.00
	6.00	18.90	113.40
	6.30	19.40	116.40
	8.00	23.90	143.40

Rectangular Tubes (BS EN 10219)

ท่อเหล็กสี่เหลี่ยมผืนผ้า สำหรับงานโครงสร้าง

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
150×150	4.00	18.00	108.00
	5.00	22.30	133.80
	6.00	26.40	158.40
	6.30	27.40	164.40
	8.00	33.90	203.40
	10.00	41.30	247.80
	12.00	47.10	282.60
	12.50	48.70	292.20
	16.00	58.70	352.20
	160×160	4.00	19.30
5.00		23.80	142.80
6.00		28.30	169.80
6.30		29.30	175.80
8.00		36.50	219.00
10.00		44.40	266.40
12.00		50.90	305.40
12.50		52.60	315.60
180×180	4.00	21.80	130.80
	5.00	27.00	162.00
	6.00	32.10	192.60
	6.30	33.30	199.80
	8.00	41.50	249.00
	10.00	50.70	304.20
	12.00	58.50	351.00
	12.50	60.50	363.00
200×200	4.00	24.30	145.80
	5.00	30.10	180.60
	6.00	35.80	214.80
	6.30	37.20	223.20
	8.00	46.50	279.00
	10.00	57.00	342.00
	12.00	66.00	396.00
	12.50	68.30	409.80
	16.00	83.80	502.80

Side Length	Thickness	Unit Mass	
		kg/m	kg/6m
mm	mm	kg/m	kg/6m
220×220	5.00	33.20	199.20
	6.00	39.60	237.60
	6.30	41.20	247.20
	8.00	51.50	309.00
	10.00	63.20	379.20
	12.00	73.50	441.00
	12.50	76.20	457.20
	16.00	93.90	563.40
250×250	5.00	38.00	228.00
	6.00	45.20	271.20
	6.30	47.10	282.60
	8.00	59.10	354.60
	10.00	72.70	436.20
	12.00	84.80	508.80
260×260	6.00	47.10	282.60
	6.30	49.10	294.60
	8.00	61.60	369.60
	10.00	75.80	454.80
	12.00	88.60	531.60
	12.50	91.90	551.40
	16.00	114.00	684.00
	300×300	6.00	54.70
6.30		57.00	342.00
8.00		71.60	429.60
10.00		88.40	530.40
12.00		104.00	624.00
12.50		108.00	648.00
16.00		134.00	804.00
350×350		8.00	84.20
	10.00	104.00	624.00
	12.00	123.00	738.00
	12.50	127.00	762.00
	16.00	159.00	954.00
	400×400	10.00	120.00
12.00		141.00	846.00
12.50		147.00	882.00
16.00		184.00	1104.00



Pressure Pipes (ASTM A53/A53M)

ท่อเหล็กกล้า ท่อเหล็กรับแรงดัน

Nominal Diameter (DN)	OD	Thickness	Unit Mass	
			kg/m	kg/6m
mm	mm	mm	kg/m	kg/6m
6.00	10.30	1.73	0.37	2.22
		2.41	0.47	2.82
8.00	13.70	2.24	0.63	3.78
		3.02	0.80	4.80
10.00	17.10	2.31	0.84	5.04
		3.20	1.10	6.60
15.00	21.30	2.77	1.27	7.62
		3.73	1.62	9.72
		4.78	1.95	11.70
		7.47	2.55	15.30
20.00	26.70	2.87	1.69	10.14
		3.91	2.20	13.20
		5.56	2.90	17.40
		7.82	3.64	21.84
25.00	33.40	3.38	2.50	15.00
		4.55	3.24	19.44
		6.35	4.24	25.44
		9.09	5.45	32.70
32.00	42.20	3.56	3.39	20.34
		4.85	4.47	26.82
		6.35	5.61	33.66
		9.70	7.77	46.62
40.00	48.30	3.68	4.05	24.30
		5.08	5.41	32.46
		7.14	7.25	43.50
50.00	60.30	10.16	9.56	57.36
		3.91	5.44	32.64
		5.54	7.48	44.88
		8.74	11.11	66.66
65.00	73.00	11.07	13.44	80.64
		5.16	8.63	51.78
		7.01	11.41	68.46
		9.52	14.90	89.40
		14.02	20.39	122.34

Nominal Diameter (DN)	OD	Thickness	Unit Mass	
			kg/m	kg/6m
mm	mm	mm	kg/m	kg/6m
80.00	88.90	3.18	6.72	40.32
		3.96	8.29	49.74
		4.78	9.92	59.52
		5.49	11.29	67.74
		6.35	12.93	77.58
		7.14	14.40	86.40
		7.62	15.27	91.62
		11.13	21.35	128.10
90.00	101.60	15.24	27.68	166.08
		3.18	7.72	46.32
		3.96	9.53	57.18
		4.78	11.41	68.46
		5.74	13.57	81.42
		6.35	14.92	89.52
		7.14	16.63	99.78
		8.08	18.63	111.78
100.00	114.30	3.18	8.71	52.26
		3.96	10.78	64.68
		4.78	12.91	77.46
		5.56	14.91	89.46
		6.35	16.07	96.42
		7.14	18.87	113.22
		7.92	20.78	124.68
		8.56	22.32	133.92
125.00	141.30	11.13	28.32	169.92
		13.49	33.54	201.24
		17.12	41.03	246.18
		3.96	13.41	80.46
		4.78	16.09	96.54
		5.56	18.61	111.66
		6.55	21.77	130.62
		7.14	23.62	141.72
65.00	73.00	7.92	26.05	156.30
		8.74	28.57	171.42
		9.52	30.94	185.64
		12.70	40.28	241.68
		15.88	49.11	294.66
		19.05	57.43	344.58