



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727



Cert.No.47014

**STANDARD ASTM A 500 ROUND CARBON STEEL PIPE FOR STRUCTURAL PURPOSES**

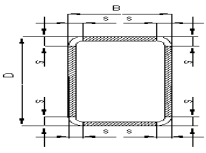
Nominal Size (DN)		Outside Diameter		Weight		Calculated Nominal Wall Thickness	
in.	mm.	in.	mm.	lb./ft.	kg./m.	in.	mm.
1/2	15	0.840	21.30	0.85	1.27	0.109	2.77
		0.840	21.30	1.09	1.62	0.147	3.73
3/4	20	1.050	26.70	1.13	1.69	0.113	2.87
		1.050	26.70	1.47	2.20	0.154	3.91
1	25	1.315	33.40	1.34	2.00	0.104	2.64
		1.315	33.40	1.68	2.50	0.133	3.38
		1.315	33.40	2.17	3.24	0.179	4.55
1-1/4	32	1.660	42.20	1.82	2.71	0.110	2.79
		1.660	42.20	2.27	3.39	0.140	3.56
		1.660	42.20	3.00	4.47	0.191	4.85
1-1/2	40	1.900	48.30	2.17	3.25	0.114	2.90
		1.900	48.30	2.72	4.05	0.145	3.68
		1.900	48.30	3.63	5.41	0.200	5.08
2	50	2.375	60.30	2.91	4.33	0.121	3.07
		2.375	60.30	3.65	5.44	0.154	3.91
		2.375	60.30	5.02	7.48	0.218	5.54
2-1/2	65	2.875	73.00	4.53	6.74	0.156	3.96
		2.875	73.00	5.40	8.04	0.188	4.78
		2.875	73.00	5.79	8.63	0.203	5.16
		2.875	73.00	7.66	11.41	0.276	7.01
3	80	3.500	88.90	5.57	8.29	0.156	3.96
		3.500	88.90	6.65	9.92	0.188	4.78
		3.500	88.90	7.58	11.29	0.216	5.49
		3.500	88.90	10.25	15.27	0.300	7.62
3-1/2	90	4.000	101.60	6.40	9.53	0.156	3.96
		4.000	101.60	7.65	11.41	0.188	4.78
		4.000	101.60	9.11	13.57	0.226	5.74
		4.000	101.60	12.50	18.63	0.318	8.08
4	100	4.500	114.30	7.24	10.78	0.156	3.96
		4.500	114.30	8.66	12.91	0.188	4.78
		4.500	114.30	10.01	14.91	0.219	5.56
		4.500	114.30	10.79	16.07	0.237	6.02
		4.500	114.30	14.98	22.32	0.337	8.56
5	125	5.563	141.30	14.62	21.77	0.258	6.55
		5.563	141.30	20.78	30.97	0.375	9.53
		5.563	141.30	38.55	57.43	0.750	19.05
6	150	6.625	168.30	18.97	28.26	0.280	7.11
		6.625	168.30	28.57	42.56	0.432	10.97
		6.625	168.30	53.16	79.22	0.864	21.95
8	200	8.625	219.10	28.55	42.55	0.322	8.18
		8.625	219.10	43.39	64.64	0.500	12.70
		8.625	219.10	72.42	107.92	0.875	22.23

**TECHNICAL SPECIFICATIONS :**

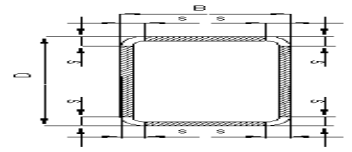
Electric Resistance Welded (TYPE-E)	Chemical Composition (%)					Mechanical Properties		
	C Max.	Si Max.	Mn Max.	P Max.	S Max.	Tensile Strength Mpa (Min.)	Yield Strength Mpa (Min.)	Elongation (%) (Min.)
Grade A	0.30	-	1.40	0.045	0.045	310	230	25
Grade B	0.30	-	1.40	0.045	0.045	400	290	23
Grade C	0.27	-	1.40	0.045	0.045	425	315	21
Grade D	0.30	-	1.40	0.045	0.045	400	250	23

**Tolerance :**

<b>Outside Diameter :</b>	NPS ≤ 1-1/2" : ± 0.5% OD. Not less than 0.13 mm. NPS ≤ 1-1/2" : ± 0.75 % OD.
<b>Wall Thickness :</b>	± 10%



ISO 9001 : 2008



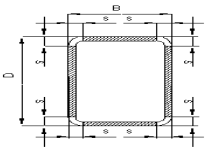
**ASTM A500 SQUARE AND RECTANGULAR HOLLOW SECTION FOR STRUCTURAL PURPOSES**

MATERIAL OF GRADE	CHEMICAL COMPOSITION (%)					MECHANICAL PROPERTIES					
	C	Mn	P	S	Cu	Yield Strength		Tensile Strength		Elongation, min	
						Round	Sharped	Round	Sharped	Round	Sharped
Max	Max	Max	Max	Max	Mpa	Mpa	Mpa	Mpa	2 in	2 in	
A	0.300	1.4	0.045	0.045	0.18	230	270	310	310	25	25
B	0.300	1.4	0.045	0.045	0.18	290	315	400	400	23	23
C	0.270	1.4	0.045	0.045	0.18	315	345	425	425	21	21
D	0.300	1.4	0.045	0.045	0.18	250	250	400	400	23	23

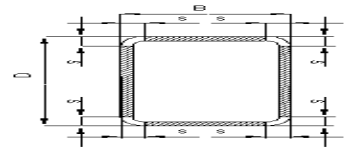
ASTM A500 SQUARE			
Nominal Size		Thick-ness	Mass per unit length
mm	in	mm	kg/m
25.4x25.4	1"x1"	2.41	1.62
		3.38	2.10
50.8x50.8	2"x2"	2.79	4.00
		3.18	4.52
		3.91	5.44
63.5x63.5	2-1/2"x2-1/2"	3.58	6.43
		4.78	8.32
		6.35	10.56
76.2x76.2	3"x3"	3.96	8.60
		4.78	10.21
		6.35	13.09
89.9x89.9	3-1/2"x3-1/2"	3.96	10.24
		4.78	12.11
		6.35	15.62
		7.92	18.88
101.6x101.6	4"x4"	4.78	13.85
		6.35	17.89
		7.92	21.61
127.0x127.0	5"x5"	4.78	17.65
		6.35	22.94
		7.92	27.93
152.4x152.4	6"x6"	4.78	21.44
		6.35	28.00
		7.92	34.25
		9.52	40.28

ASTM A500 RECTANGULAR			
Nominal Size		Thick-ness	Mass per unit length
mm	in	mm	kg/m
76.2x50.8	3"x2"	3.58	6.43
		4.78	8.32
		6.35	10.56
101.6x50.8	4"x2"	3.96	8.60
		4.78	10.21
		6.35	13.09
101.6x76.2	4"x3"	3.96	10.24
		4.78	12.11
		6.35	15.62
127.0x76.2	5"x3"	4.78	13.85
		6.35	17.89
		7.92	21.61
152.4x76.2	6"x3"	9.52	25.06
		4.78	15.74
		6.35	20.42
152.4x101.6	6"x4"	7.92	24.78
		9.52	28.85
		4.78	17.65
152.4x101.6	6"x4"	6.35	22.94
		7.92	27.93
		9.52	32.65
		4.78	21.44
203.2x101.6	8"x4"	6.35	28.00
		7.92	34.25
		9.52	40.28
		4.78	21.44

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



ISO 9001 : 2008



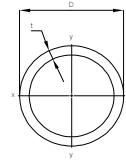
**ASTM A500 SQUARE AND RECTANGULAR HOLLOW SECTION FOR STRUCTURAL PURPOSES**

MATERIAL OF GRADE	CHEMICAL COMPOSITION (%)					MECHANICAL PROPERTIES					
	C	Mn	P	S	Cu	Yield Strength		Tensile Strength		Elongation, min	
						Round	Sharped	Round	Sharped	Round	Sharped
Max	Max	Max	Max	Max	Mpa	Mpa	Mpa	Mpa	2 in	2 in	
A	0.300	1.4	0.045	0.045	0.18	230	270	310	310	25	25
B	0.300	1.4	0.045	0.045	0.18	290	315	400	400	23	23
C	0.270	1.4	0.045	0.045	0.18	315	345	425	425	21	21
D	0.300	1.4	0.045	0.045	0.18	250	250	400	400	23	23

ASTM A500 SQUARE			
Nominal Size		Thick-ness	Mass per unit length
mm	in	mm	kg/m
25.4x25.4	1"x1"	2.41	1.62
		3.38	2.10
50.8x50.8	2"x2"	2.79	4.00
		3.18	4.52
		3.91	5.44
63.5x63.5	2-1/2"x2-1/2"	3.58	6.43
		4.78	8.32
		6.35	10.56
76.2x76.2	3"x3"	3.96	8.60
		4.78	10.21
		6.35	13.09
89.9x89.9	3-1/2"x3-1/2"	3.96	10.24
		4.78	12.11
		6.35	15.62
		7.92	18.88
101.6x101.6	4"x4"	4.78	13.85
		6.35	17.89
		7.92	21.61
127.0x127.0	5"x5"	4.78	17.65
		6.35	22.94
		7.92	27.93
152.4x152.4	6"x6"	4.78	21.44
		6.35	28.00
		7.92	34.25
		9.52	40.28

ASTM A500 RECTANGULAR			
Nominal Size		Thick-ness	Mass per unit length
mm	in	mm	kg/m
76.2x50.8	3"x2"	3.58	6.43
		4.78	8.32
		6.35	10.56
101.6x50.8	4"x2"	3.96	8.60
		4.78	10.21
		6.35	13.09
101.6x76.2	4"x3"	3.96	10.24
		4.78	12.11
		6.35	15.62
127.0x76.2	5"x3"	4.78	13.85
		6.35	17.89
		7.92	21.61
152.4x76.2	6"x3"	9.52	25.06
		4.78	15.74
		6.35	20.42
152.4x101.6	6"x4"	7.92	24.78
		9.52	28.85
		4.78	17.65
152.4x101.6	6"x4"	6.35	22.94
		7.92	27.93
		9.52	32.65
		4.78	21.44
203.2x101.6	8"x4"	6.35	28.00
		7.92	34.25
		9.52	40.28
		4.78	21.44

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



## AS 1163 CARBON STEEL PIPE FOR STRUCURAL PURPOSES

GRADES	CHEMICAL COMPOSITION (Cast or Product Analysis) % MAX						MECHANICAL PROPERTIES			
							Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hollow Sections
	C	Si	Mn	P	S	CE				
C250	0.12	0.05	0.5	0.03	0.03	0.25	250	320	22	18
C350	0.2	0.45	1.6	0.03	0.03	0.43	350	430	20	16

C250				
Nominal Dimension		Outside Diameter	Thick-ness	Mass per unit length
mm	in			
15	1/2"	21.3	2.60	1.20
			3.20	1.43
20	3/4"	26.9	2.60	1.56
			3.20	1.87
25	1"	33.7	3.20	2.41
			4.00	2.93
32	1-1/4"	42.4	3.20	3.09
			4.00	3.79
40	1-1/2"	48.3	3.20	3.56
			4.00	4.37
			5.40	5.71
50	2"	60.3	3.60	5.03
			4.50	6.19
			5.40	7.31
65	2-1/2"	76.1	3.60	6.44
			4.50	7.95
			5.90	10.20
80	3"	88.9	4.00	8.38
			5.00	10.30
			5.90	12.10
90	3-1/2"	101.6	4.00	9.63
			5.00	11.90
100	4"	114.3	4.50	12.20
			5.40	14.50
125	5"	139.7	5.00	16.60
			5.40	17.90
150	6"	165.1	5.00	19.70
			5.40	21.30

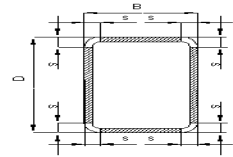
C350				
Nominal Dimension		Outside Diameter	Thick-ness	Mass per unit length
mm	in			
15	1/2"	21.3	2.00	0.95
			2.00	1.23
20	3/4"	26.9	2.30	1.40
			2.00	1.56
25	1"	33.7	2.60	1.99
			2.00	1.99
32	1-1/4"	42.4	2.60	2.55
			2.30	2.61
40	1-1/2"	48.3	2.90	3.25
			2.30	3.29
50	2"	60.3	2.90	4.11
			2.30	4.19
65	2-1/2"	76.1	3.20	5.75
			2.60	5.53
			3.20	6.76
80	3"	88.9	4.80	9.96
			5.50	11.30
			2.60	6.35
90	3-1/2"	101.6	3.20	7.77
			3.20	8.77
100	4"	114.3	3.60	9.83
			4.80	13.00
			6.00	16.00
125	5"	139.7	3.00	10.10
			3.50	11.80
150	6"	165.1	3.00	12.00
			3.50	13.90
150	6"	168.3	4.80	19.40
			6.40	25.60
			7.10	28.20
200	8"	219.1	4.80	25.40
			6.40	33.60
			8.20	42.60

### Dimension Tolerances

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

**Thickness** : ± 10%

**Weight** : - 4%



## AS 1163 SQUARE HOLLOW SECTION FOR STRUCTURAL PURPOSES

GRADES	CHEMICAL COMPOSITION (Cast or Product Analysis) % MAX						MECHANICAL PROPERTIES			
							Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hollow Sections
	C	Si	Mn	P	S	CE				
C350	0.20	0.45	1.60	0.03	0.03	0.43	350	430	20	16
C450	0.20	0.45	1.70	0.03	0.03	0.43	450	500	16	14

C350			
Nominal Size	Thick-ness	Mass per unit length	Cross Sectional Area
mm	mm	kg/m	mm <sup>2</sup>
25 x 25	1.60	1.12	143
	2.00	1.36	174
	2.50	1.64	209
	3.00	1.89	241
50 x 50	1.60	2.38	303
	2.00	2.93	374
	2.50	3.60	459
	3.00	4.25	541
	4.00	5.35	681
75 x 75	2.50	5.56	709
	3.00	6.60	841
	3.50	7.53	959
	4.00	8.49	1080
	5.00	10.30	1310
	6.00	12.00	1530
100 x 100	3.00	8.96	1140
	4.00	11.60	1480
	5.00	14.20	1810
	6.00	16.70	2130
	9.00	23.50	3000
125 x 125	4.00	8.96	1880
	5.00	18.20	2310
	6.00	21.40	2730
	9.00	30.60	3900
150 x 150	5.00	22.10	2810
	6.00	26.20	3330
	9.00	37.70	4800
200 x 200	5.00	29.90	3810
	6.00	35.60	4530
	9.00	51.80	6600

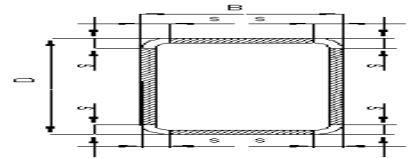
C450			
Nominal Size	Thick-ness	Mass per unit length	Cross Sectional Area
mm	mm	kg/m	mm <sup>2</sup>
25 x 25	2.30	1.53	195
	2.80	3.99	508
50 x 50	2.30	3.34	425
	2.80	3.99	508
75 x 75	2.30	5.14	655
	2.80	6.19	788
	3.30	7.14	909
100 x 100	2.80	8.39	1070
	3.30	9.73	1240
	3.80	11.10	1410

### Dimension Tolerances

Outside Diameter : ± 1% with minimum of ± 0.5 mm.

Thickness : ± 10%

Weight : - 4%



## AS 1163 RECTANGULAR HOLLOW SECTION FOR STRUCTURAL PURPOSES

GRADES	CHEMICAL COMPOSITION (Cast or Product Analysis) % MAX						MECHANICAL PROPERTIES			
							Yield Strength	Tensile Strength	Circular Hollow Sections	Rectangle Hollow Sections
	C	Si	Mn	P	S	CE				
C350	0.20	0.45	1.60	0.03	0.03	0.43	350	430	20	16
C450	0.20	0.45	1.70	0.03	0.03	0.43	450	500	16	14

C350			
Nominal Size	Thick-ness	Mass per unit length	Cross Sectional Area
mm	mm	kg/m	mm <sup>2</sup>
50 x 25	1.60	1.75	223
	2.00	2.15	274
	2.50	2.62	334
	3.00	3.07	391
100 x 50	2.00	4.50	574
	2.50	5.56	709
	3.00	6.60	841
	3.50	7.53	959
	4.00	8.49	1080
	5.00	10.30	1310
	6.00	12.00	1530
125 x 75	3.00	8.96	1140
	4.00	11.60	1480
	5.00	14.20	1810
150 x 50	3.00	8.96	1140
	4.00	11.60	1480
	5.00	14.20	1810
150 x 100	4.00	14.80	1880
	5.00	18.20	2310
	6.00	21.40	2730
200 x 100	4.00	17.90	2280
	5.00	22.10	2810
	6.00	26.20	3330

C450			
Nominal Size	Thick-ness	Mass per unit length	Cross Sectional Area
mm	mm	kg/m	mm <sup>2</sup>
50 x 25	2.30	2.44	310
	2.80	2.89	368
100 x 50	2.30	5.14	655
	2.80	6.19	788
125 x 75	3.30	7.14	909
	2.80	8.39	1070
	3.30	9.73	1240
125 x 75	3.80	11.10	1410

### Dimension Tolerances

Outside Diameter : ± 1% with minimum of ± 0.5 mm.

Thickness : ± 10%

Weight : - 4%



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**BS 1139 - 1990 METAL SCAFFOLDING  
SPECIFICATION FOR TUBES FOR USE IN SCAFFOLDING**

Nominal Size (DN) in. (mm.)	Outside Diameter			Thickness			Weight Plain End STD. kg./ m
	max. mm.	STD. mm.	min. mm.	mm.			
				max.	STD.	min.	
1-1/2 (40)	48.8	48.3	47.8	4.80	4.0	3.60	4.37

**TECHNICAL SPECIFICATIONS :**

Chemical Composition				Mechanical				
C max. %	Si max. %	P max. %	S max. %	Tensile Strength (min.)		Yield Strength (min.)		Elongation (min.) %
				N/mm. <sup>2</sup>	Kgf/m. <sup>2</sup>	N/mm. <sup>2</sup>	Kgf/m. <sup>2</sup>	
0.20	0.30	0.060	0.060	340-460	34.7-46.9	210	21.4	22

**DIMENSION TOLERANCES :**

Permissible Variation	
Side Length :	± 0.5 mm.
Wall Thickness :	+ 0.8 mm. , - 0.4 mm.
Length :	± 6.0 mm.
Weight :	± 7.5% Quantiti of 150 M. and over ± 5%



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**BS EN 10219 : 1997 COLD FORMED WELDED STRUCTURAL  
HOLLOW SECTIONS OF NON-ALLOY AND FINE GRAIN STEELS  
Nominal dimensions and sectional properties of circular hollow sections**

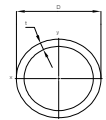
Nominal Size	Outside Diameter	Thickness	Weight	Nominal Size	Outside Diameter	Thickness	Weight	Nominal Size	Outside Diameter	Thickness	Weight	Nominal Size	Outside Diameter	Thickness	Weight
in	mm.	STD	STD	in	mm.	STD	STD	in	mm.	STD	STD	in	mm.	STD	STD
		mm.	kg/m.			mm.	kg/m.			mm.	kg/m.			mm.	kg/m.
1/2"	21.3	2.00	0.95	2"	60.3	2.00	2.88	3"	88.9	6.30	12.80	5"	139.7	6.00	19.80
	21.3	2.50	1.16		60.3	2.50	3.56		3-1/2"	101.6	2.00		4.91	139.7	6.30
	21.3	3.00	1.35		60.3	3.00	4.24	101.6		2.50	6.11		139.7	8.00	26.00
3/4"	26.9	2.00	1.23		60.3	4.00	5.55	101.6		3.00	7.29	6"	168.3	3.00	12.20
	26.9	2.50	1.50		60.3	5.00	6.82	101.6		4.00	9.63		168.3	4.00	16.20
	26.9	3.00	1.77		2-1/2"	76.1	2.00	3.65	101.6	5.00	11.90		168.3	5.00	20.10
1"	33.7	2.00	1.56	76.1		2.50	4.54	101.6	6.00	14.10	168.3		6.00	24.00	
	33.7	2.50	1.92	76.1		3.00	5.41	101.6	6.30	14.80	168.3		6.30	25.20	
	33.7	3.00	2.27	76.1		4.00	7.11	4"	114.3	2.50	6.89		168.3	8.00	31.60
1-1/4"	42.4	2.00	1.99	76.1	5.00	8.77	114.3		3.00	8.23	8"	219.1	4.00	21.2	
	42.4	2.50	2.46	76.1	6.00	10.40	114.3		4.00	10.90		219.1	5.00	26.4	
	42.4	3.00	2.91	3"	76.1	6.30	10.80		114.3	5.00		13.50	219.1	6.00	31.5
42.4	4.00	3.79	88.9		2.00	4.29	114.3	6.00	16.00	219.1		6.30	33.1		
1-1/2"	48.3	2.00	2.28		88.9	2.50	5.33	114.3	6.30	16.80		219.1	8.00	41.6	
	48.3	2.50	2.82		88.9	3.00	6.36	114.3	8.00	21.00		5"	139.7	3.00	10.10
	48.3	3.00	3.35	88.9	4.00	8.38	139.7	4.00	13.40	139.7	4.00		13.40		
48.3	4.00	4.37	88.9	5.00	10.30	139.7	5.00	16.60	139.7	5.00	16.60				
48.3	5.00	5.34	88.9	6.00	12.30										

**TECHNICAL SPECIFICATIONS :**

Chemical composition					Mechanical (min.)				
Material of Grade	C	Mn	P	S	Tensile strength(min.)		Yield strength(min.)	Elongation (min.)	
	max.	max.	max.	max.	N / mm <sup>2</sup>				
	%	%	%	%	t <3 mm.	3 mm. ≤, t ≤40	N / mm <sup>2</sup>	%	
S235JRH	0.17	1.40	0.045	0.045	360-510	340-370	235	24	
S275J0H	0.20	1.50	0.040	0.040	430-580	410-560	275	20	
S275J2H	0.20	1.50	0.035	0.040	430-580	410-560	275	20	
S255J0H	0.22	1.60	0.040	0.040	510-680	490-630	355	20	
S255J2H	0.22	1.60	0.035	0.040	510-680	490-630	355	20	

**DIMENSION TOLERANCES :**

Permissible Variation	
Side Length :	± 1%
Wall Thickness :	5 mm. or under : ± 10% , over 5 mm. : ± 0.5 mm.
Length :	+ 40 mm. - 0 mm.
Weight :	± 6 %







**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**BS EN 10219 : 1997 COLD FORMED WELDED STRUCTURAL  
HOLLOW SECTIONS OF NON-ALLOY AND FINE GRAIN STEELS  
Nominal dimensions and sectional properties of square hollow sections**

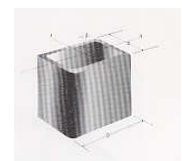
SIZE	Thickness	Weight	SIZE	Thickness	Weight	SIZE	Thickness	Weight	SIZE	Thickness	Weight
B x B	STD	STD	B x B	STD	STD	B x B	STD	STD	B x B	STD	STD
mm.	mm.	kg/m.	mm.	mm.	kg/m.	mm.	mm.	kg/m.	mm.	mm.	kg/m.
20x20	2.00	1.05	50x50	3.00	4.25	80x80	8.00	16.40	120x120	3.00	10.80
25x25	2.00	1.36	50x50	4.00	5.45	90x90	3.00	8.01	120x120	4.00	14.20
25x25	2.50	1.64	50x50	5.00	6.56	90x90	4.00	10.50	120x120	5.00	17.50
25x25	3.00	1.89	60x60	2.00	3.56	90x90	5.00	12.80	120x120	6.00	20.70
30x30	2.00	1.68	60x60	2.50	4.39	90x90	6.00	15.10	120x120	6.30	21.40
30x30	2.50	2.03	60x60	3.00	5.19	90x90	6.30	15.50	120x120	8.00	26.40
30x30	3.00	2.36	60x60	4.00	6.71	90x90	8.00	18.90	150x150	4.00	18.00
40x40	2.00	2.31	60x60	5.00	8.13	100x100	3.00	8.96	150x150	5.00	22.30
40x40	2.50	2.82	80x80	3.00	7.07	100x100	4.00	11.70	150x150	6.00	26.40
40x40	3.00	3.30	80x80	4.00	9.22	100x100	5.00	14.40	150x150	6.30	27.40
40x40	4.00	4.20	80x80	5.00	11.30	100x100	6.00	17.00	150x150	8.00	33.90
50x50	2.00	2.93	80x80	6.00	13.20	100x100	6.30	17.50			
50x50	2.50	3.60	80x80	6.30	13.50	100x100	8.00	21.40			

**TECHNICAL SPECIFICATIONS :**

Chemical composition					Mechanical (min.)			
Material of Grade	C	Mn	P	S	Tensile strength(min.)		Yield strength(min.)	Elongation (min.)
	max.	max.	max.	max.	N / mm <sup>2</sup>		N / mm <sup>2</sup>	(min.)
	%	%	%	%	t < 3 mm.	3 mm. ≤ t ≤ 40	N / mm <sup>2</sup>	%
S235JRH	0.17	1.40	0.045	0.045	360-510	340-370	235	24
S275J0H	0.20	1.50	0.040	0.040	430-580	410-560	275	20
S275J2H	0.20	1.50	0.035	0.035	430-580	410-560	275	20
S255J0H	0.22	1.60	0.040	0.040	510-680	490-630	355	20
S255J2H	0.22	1.60	0.035	0.035	510-680	490-630	355	20

**DIMENSION TOLERANCES :**

Permissible Variation		
Side Length	:	100 mm. or under : ± 1% , over 100 mm. : ± 0.8%
Wall Thickness	:	5 mm. or under : ± 10% , over 5 mm. : ± 0.5 mm.
Length	:	+ not specified , - 0 mm.
Weight	:	± 6 %





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3

QMS47014 No.2

**BS EN 10219 : 1997 COLD FORMED WELDED STRUCTURAL  
HOLLOW SECTIONS OF NON-ALLOY AND FINE GRAIN STEELS  
Nominal dimensions and sectional properties of rectangular hollow sections**

SIZE H x B mm.	Thickness	Weight STD kg/m.	SIZE H x B mm.	Thickness	Weight STD kg/m.	SIZE H x B mm.	Thickness	Weight STD kg/m.	SIZE H x B mm.	Thickness	Weight STD kg/m.
	STD mm.			STD mm.			STD mm.			STD mm.	
40x20	2.00	1.68	100x40	3.00	6.13	100x80	3.00	8.01	120x80	6.30	17.50
40x20	2.50	2.03	100x40	4.00	7.97	100x80	4.00	10.50	120x80	8.00	21.40
40x20	3.00	2.36	100x40	5.00	9.70	100x80	5.00	12.80	140x80	4.00	13.00
50x30	2.00	2.31	100x50	2.50	5.56	100x80	6.00	15.10	140x80	5.00	16.00
50x30	2.50	2.82	100x50	3.00	6.60	100x80	6.30	15.50	140x80	6.00	18.90
50x30	3.00	3.30	100x50	4.00	8.59	120x60	2.50	6.74	140x80	6.30	19.40
50x30	4.00	4.20	100x50	5.00	10.50	120x60	3.00	8.01	140x80	8.00	23.90
60x40	2.00	2.93	100x50	6.00	12.30	120x60	4.00	10.50	150x100	4.00	14.90
60x40	2.50	3.60	100x50	6.30	12.50	120x60	5.00	12.80	150x100	5.00	18.30
60x40	3.00	4.25	100x60	2.50	5.96	120x60	6.00	15.10	150x100	6.00	21.70
70x50	2.00	3.56	100x60	3.00	7.07	120x60	6.30	15.50	150x100	6.30	22.40
70x50	2.50	4.39	100x60	4.00	9.22	120x60	8.00	18.90	150x100	8.00	27.70
70x50	3.00	5.19	100x60	5.00	11.30	120x80	3.00	8.96	150x100	10.00	33.40
70x50	4.00	6.71	100x60	6.00	13.20	120x80	4.00	11.70	200x100	4.00	18.00
70x50	5.00	8.13	100x60	6.30	13.50	120x80	5.00	14.40	200x100	5.00	22.30
100x40	2.50	5.17	100x80	2.50	6.74	120x80	6.00	17.00	200x100	6.00	26.40

**TECHNICAL SPECIFICATIONS :**

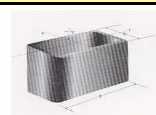
Chemical composition					Mechanical (min.)			
Material of Grade	C	Mn	P	S	Tensile strength(min.) N / mm <sup>2</sup>		Yield strength(min.) N / mm <sup>2</sup>	Elongation (min.) %
	max.	max.	max.	max.	t < 3 mm.	3 mm. ≤ t ≤ 40	N / mm <sup>2</sup>	%
	%	%	%	%				
S235JRH	0.17	1.40	0.045	0.045	360-510	340-370	235	24
S275J0H	0.20	1.50	0.040	0.040	430-580	410-560	275	20
S275J2H	0.20	1.50	0.035	0.035	430-580	410-560	275	20
S255J0H	0.22	1.60	0.040	0.040	510-680	490-630	355	20
S255J2H	0.22	1.60	0.035	0.035	510-680	490-630	355	20

**TECHNICAL SPECIFICATIONS :**

Chemical composition				Mechanical (min.)		
C	Mn	P	S	Tensile strength(min.) N / mm <sup>2</sup>	Yield strength(min.) N / mm <sup>2</sup>	Elongation (min.) %
max.	max.	max.	max.	N / mm <sup>2</sup>	N / mm <sup>2</sup>	%
%	%	%	%			
0.20	1.50	0.040	0.040	460-510	275	20

**DIMENSION TOLERANCES :**

Permissible Variation	
Side Length :	100 mm. or under : ± 1% , over 100 mm. : ± 0.8%
Wall Thickness :	5 mm. or under : ± 10% , over 5 mm. : ± 0.5 mm.
Length :	+ not specified , - 0 mm.
Weight :	± 6 %





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

## EN 39 : 2001 METAL SCAFFOLDING

### SPECIFICATION FOR TUBES FOR USE IN SCAFFOLDING

TUBE TYPE	Nominal Size (DN) in. (mm.)	Outside Diameter			Thickness			Weight Plain End STD. kg./ m
		max.	STD.	min.	mm.			
		mm.	mm.	mm.	max.	STD.	min.	
3	1-1/2 (40)	48.8	48.3	47.8	3.70	3.2	2.70	3.56
4	1-1/2 (40)	48.8	48.3	47.8	4.50	4.0	3.50	4.37

#### TECHNICAL SPECIFICATIONS :

Chemical Composition						Mechanical		
C	Si	Mn	P	S	AL	Yield	Tensile	Elongation
max.	max.	max.	max.	max.	min.	Strength (min.)		(min.)
%	%	%	%	%	%	MPa <sup>1</sup>		%
0.20	0.05	1.40	0.04	0.045	0.020	235	340/520	24

#### DIMENSION TOLERANCES :

Permissible Variation	
Outside Diameter (O.D.) :	± 0.5 mm.
Wall Thickness :	± 0.5 mm.
Length :	+ 40 mm. / - 0 mm.
Weight :	± 7.5% Quantiti of 150 M. and over ± 5%



**UNITED STEEL PIPE CO.,LTD.**



ISO 9001 : 2008



Cert.No.11727 No.3

QMS47014 No.2

**STANDARD JIS G 3444 : 1988 CARBON STEEL PIPES FOR GENERAL STRUCTURAL PURPOSE**

Outside Diameter mm.	O.D.(Class 2) Tolerance mm.	Thickness mm.	THK.(Class 2) Tolerance mm.	Unit mass kg./m.	Outside Diameter mm.	O.D.(Class 2) Tolerance mm.	Thickness mm.	THK.(Class 2) Tolerance mm.	Unit mass kg./m.
21.7	± 0.25	2.0	± 0.3	0.972	101.6	± 0.50	3.2	± 0.3	7.76
27.2	± 0.25	2.0	± 0.3	1.24			4.0	± 0.4	9.63
		2.3	± 0.3	1.41			5.0	± 0.5	11.9
34.0	± 0.25	2.3	± 0.3	1.80	114.3	± 0.55	3.2	± 0.3	8.77
42.7	± 0.25	2.3	± 0.3	2.29			3.6	± 0.3	9.83
		2.5	± 0.3	2.49			4.5	± 0.4	12.2
		2.8	± 0.3	2.76			5.6	± 0.5	15.0
48.6	± 0.25	2.3	± 0.3	2.63	139.8	± 0.65	3.6	± 0.3	12.1
		2.5	± 0.3	2.84			4.0	± 0.4	13.4
		2.8	± 0.3	3.16			4.5	± 0.4	15.0
		3.2	± 0.3	3.58			6.0	± 0.6	19.8
60.5	± 0.30	2.3	± 0.3	3.30	165.2	± 0.80	4.5	± 0.4	17.8
		3.2	± 0.3	4.52			5.0	± 0.5	19.8
		4.0	± 0.4	5.57			6.0	± 0.6	23.6
76.3	± 0.35	2.8	± 0.3	5.08			7.0	± 0.7	27.3
		3.2	± 0.3	5.77	216.3	± 1.05	4.5	± 0.4	23.5
		4.0	± 0.4	7.13			6.0	± 0.6	31.1
89.1	± 0.40	2.8	± 0.3	5.96			7.0	± 0.7	36.1
		3.2	± 0.3	6.78	8.0	± 0.8	41.1		
		4.0	± 0.4	8.39					

Chemical Composition						Mechanical Properties		
Designation of grade	C % max.	Si % max.	Mn % max.	P % max.	S % max.	Tensile N/mm <sup>2</sup> min.	Yield N/mm <sup>2</sup> min.	Elongation % min.
STK 290	-	-	-	0.040	0.040	290	-	30
STK 400	0.25	-	-	0.040	0.040	400	235	23
STK 500	0.3	0.35	0.30-1.00	0.040	0.040	500	355	15
STK 490	0.18	0.55	1.5	0.040	0.040	490	315	23

**DIMENSION TOLERANCES :**

**Permissible Variation**

Length	:	+ 40 mm. - 0 mm.
Weight	:	± 10 % per piece

**JIS G3466 (1988) : CARBON STEEL SQUARE PIPE FOR GENERAL STRUCTURAL PURPOSES**

Side length A x B mm.	Wall Thickness		Unit Mass kg./ m.	Side length A x B mm.	Wall Thickness		Unit Mass kg./ m.	
	STD				STD			
40x40	1.60		1.88	100x100	2.30		6.95	
	2.30		2.62		3.20		9.52	
50x50	1.60		2.38		4.00		11.70	
	2.30		3.34		4.50		13.10	
	3.20		4.50		6.00		17.00	
60x60	1.60		2.88		9.00		24.10	
	2.30		4.06		12.00		30.20	
	3.20		5.50					
75x75	1.60		3.64		125x125	3.20		12.00
	2.30		5.14			4.50		16.60
	3.20		7.01			5.00		18.30
	4.50		9.55			6.00		21.70
80x80	2.30		5.50	9.00		31.10		
	3.20		7.51	12.00		39.70		
	4.50		10.30					
90x90	2.30		6.23	150x150	4.50		20.10	
	3.20		8.51		5.00		22.30	
					6.00		26.40	
				9.00		38.20		

**JIS G3466 (1988) : CARBON STEEL RECTANGULAR PIPE FOR GENERAL STRUCTURAL PURPOSES**

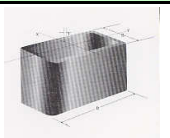
Side length A x B mm.	Wall Thickness		Unit Mass kg./ m.	Side length A x B mm.	Wall Thickness		Unit Mass kg./ m.
	STD				STD		
50x20	1.60		1.63	100x20	1.60		2.88
	2.30		2.25		2.30		4.06
50x30	1.60		1.88	100x40	1.60		3.38
	2.30		2.62		2.30		4.78
60x30	1.60		2.13		4.20		8.32
	2.30		2.98	100x50	1.60		3.64
	3.20		3.99		2.30		5.14
75x20	1.60		2.25		3.20		7.01
	2.30		3.16	4.50		9.55	
75x45	1.60		2.88	125x40	1.60		4.01
	2.30		4.06		2.30		5.69
	3.20		5.50	125x75	2.30		6.95
80x40	1.60		2.88		3.20		9.52
	2.30		4.06		4.00		11.70
90x45	2.30		4.60		4.50		13.10
	3.20		6.25	6.00		17.00	
				150x75	3.20		10.80
				150x80	4.50		15.20
					5.00		16.80
					6.00		19.80

**TECHNICAL SPECIFICATIONS :**

Symbol of Class	Chemical Composition					Mechanical Properties (min.)				
	C	Si	Mn	P	S	Tensile Strength		Yield Strength		Elongation
	Max. %	Max. %	Max. %	Max. %	Max. %	N/mm. <sup>2</sup>	kgf/mm. <sup>2</sup>	N/mm. <sup>2</sup>	kgf/mm. <sup>2</sup>	
STKR41	0.25	-	-	0.040	0.040	-	41	-	25	23
STKR50	0.18	0.55	1.50	0.040	0.040	-	50	-	33	23
STKR400	0.25	-	-	0.040	0.040	400	-	245	-	23
STKR490	0.18	0.55	1.50	0.040	0.040	490	-	325	-	23

**DIMENSION TOLERANCES :**

Permissible Variation	
Side Length :	100 mm. or under : ± 1.50 mm. , over 100 mm. ± 1.50%
Wall Thickness :	under 3.00 mm. : ± 0.30 mm. , 3.00 mm. or over : ± 10%
Length :	+ not specified , - 0 mm.
Weight :	± 10%
Angularity :	± 1.5°





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3

QMS47014 No.2

**CARBON STEEL ROUND PIPES FOR GENERAL STRUCTURAL PURPOSES**

**TIS 107 : 2533**

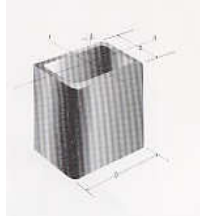
Nominal size DN in.(mm.)	Outside Diameter			Thickness			Unit Mass	Nominal size DN in.(mm.)	Outside Diameter			Thickness			Unit Mass
	Min. mm.	STD. mm.	Max. mm.	Min. mm.	STD. mm.	Max. mm.	STD. kg./m.		Min. mm.	STD. mm.	Max. mm.	Min. mm.	STD. mm.	Max. mm.	STD. kg./m.
1/2 (15)	21.2	21.7	22.2	1.70	2.00	2.30	0.972	3-1/2 (90)	100.6	101.6	102.6	2.90	3.20	3.50	7.76
3/4 (20)	26.7	27.2	27.7	2.00	2.30	2.60	1.41		3.60	4.00	4.40	9.63			
1 (25)	33.5	34.0	34.5	2.00	2.30	2.60	1.80	4 (100)	113.2	114.3	115.4	2.90	3.20	3.50	8.77
1-1/4 (32)	42.2	42.7	43.2	2.00	2.30	2.60	2.29					4.05	4.50	4.95	12.2
1-1/2 (40)	48.1	48.6	49.1	2.00	2.30	2.60	2.63	5 (125)	138.4	139.8	141.2	4.05	4.50	4.95	15.0
				2.90	3.20	3.50	3.58					5.40	6.00	6.60	19.8
2 (50)	59.9	60.5	61.1	2.90	3.20	3.50	4.52	6 (150)	163.5	165.2	166.9	4.05	4.50	4.95	17.8
				3.60	4.00	4.40	5.57					5.40	6.00	6.60	23.6
2-1/2 (65)	75.5	76.3	77.1	2.90	3.20	3.50	5.77	7 (175)	188.8	190.7	192.6	4.50	5.00	5.50	22.9
				3.60	4.00	4.40	7.13					6.30	7.00	7.70	31.7
3 (80)	88.2	89.1	90.0	2.90	3.20	3.50	6.78	8 (200)	214.1	216.3	218.5	5.40	6.00	6.60	31.1
				3.60	4.00	4.40	8.39					7.20	8.00	8.80	41.1

**TECHNICAL SPECIFICATIONS :**

Chemical Composition (%)					Mechanical Properties		
C Max.	Si Max.	Mn Max.	P Max.	S Max.	Tensile Strength N/mm. <sup>2</sup>	Yield Strength N/mm. <sup>2</sup>	Elongation (%)
0.28	-	-	0.048	0.048	402	235	23

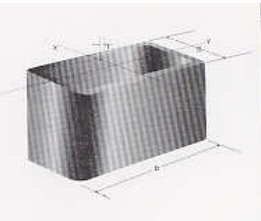
**DIMENSION TOLERANCES :**

**CARBON STEEL SQUARE PIPES FOR GENERAL STRUCTURAL PURPOSES**

**TIS 107 : 2533**


Side length D x D mm.	Thickness mm.	Unit Mass kg./ m.	Side length D x D mm.	Thickness mm.	Unit Mass kg./ m.
25 x 25	2.0	1.36	100 x 100	3.2	9.52
	2.3	1.53		4.0	11.70
32 x 32	2.3	2.04	150 x 150	4.5	13.10
	3.2	2.69		6.0	20.10
38 x 38	2.3	2.47	175 x 175	4.5	23.70
	3.2	3.29		6.0	31.10
50 x 50	2.3	3.34	200 x 200	6.0	35.80
	3.2	4.50		8.0	46.90
60 x 60	2.3	4.06		9.0	52.30
	3.2	5.50	250 x 250	6.0	45.20
	4.0	6.71		8.0	59.20
75 x 75	3.2	7.01	300 x 300	9.0	66.50
	4.0	8.59		6.0	54.70
90 x 90	3.2	8.51		9.0	80.60
	4.0	10.48	12.0	106.00	
	4.5	11.67	350 x 350	9.0	94.70
		12.0		124.00	

**CARBON STEEL RECTANGULAR PIPES FOR GENERAL STRUCTURAL PURPOSES**

**TIS 107 : 2533**


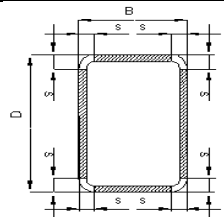
Side length D x B mm.	Thickness mm.	Unit Mass kg./ m.	Side length D x B mm.	Thickness mm.	Unit Mass kg./ m.
50 x 25	2.3	2.44	125 x 50	3.2	8.26
	3.2	3.24		4.0	10.20
60 x 30	2.3	2.98	125 x 75	4.5	11.30
	3.2	3.99		3.2	9.52
75 x 38	2.3	3.81	150 x 80	4.0	11.70
	3.2	5.15		4.5	13.10
75 x 45	2.3	4.06	150 x 100	4.5	15.20
	3.2	5.50		6.0	19.80
90 x 45	2.3	4.60	200 x 100	6.0	16.60
	3.2	6.25		6.0	21.70
100 x 50	3.2	7.01		4.5	20.10
	4.0	8.59		6.0	26.40
	4.5	9.55			

**TECHNICAL SPECIFICATIONS :**

Chemical Composition (%)					Mechanical Properties		
C	Si	Mn	P	S	Tensile Strength	Yield Strength	Elongation
Max.	Max.	Max.	Max.	Max.	N/mm. <sup>2</sup>	N/mm. <sup>2</sup>	(%)
0.28	-	-	0.048	0.048	402	235	23

**DIMENSION TOLERANCES :**

Permissible Variation	
Side Length :	under 100 mm. : ± 1.50 mm.
:	over 100 mm. : ± 1.50%
Wall Thickness :	2.00 mm. Up to 3.20 mm. : ± 0.30 mm.
:	4.00 mm. Up to 12.00 mm. : ± 10%
Length :	+ not specified, - 0 mm.
Weight :	± 10%





**UNITED STEEL PIPE CO.,LTD.**



TIS



Cert.No.11727 No.3

ISO 9001 : 2008



QMS47014 No.2

**STANDARD ASTM A53-95 GRADE A & B BLACK AND GALVANIZED STEEL PIPES**

NPS Designator in.	Outside Diameter mm.	O.D Tolerance mm.	Wall Thickness mm.	SCH NO.	Plain End Weight kg/m.	Threads & Couplings kg/m.	Hydrostatic Test Pressure	
							Grade A psi (Mpa)	Grade B psi (Mpa)
1/2	21.3	±0.4	2.77	40	1.27	1.27	700 (4.83)	700 (4.83)
3/4	26.7	±0.4	2.87	40	1.69	1.69	700 (4.83)	700 (4.83)
1	33.4	±0.4	3.38	40	2.50	2.50	700 (4.83)	700 (4.83)
1 1/4	42.2	±0.4	3.56	40	3.39	3.40	1,200(8.27)	1,300(8.96)
1 1/2	48.3	±0.4	3.68	40	4.05	4.06	1,200(8.27)	1,300(8.96)
2	60.3	±0.6	3.91	40	5.44	5.46	2,300(15.86)	2,500(17.24)
2 1/2	73	±0.7	5.16	40	8.63	8.67	2,500(17.24)	2,500(17.24)
3	88.9	±0.8	5.49	40	11.29	11.35	2,220(15.31)	2,500(17.24)
3 1/2	101.6	±1.0	5.74	40	13.57	13.71	2,030(14.00)	2,370(16.34)
4	114.3	±1.1	6.02	40	16.07	16.23	1,900(13.10)	2,210(15.24)
5	141.3	±1.4	6.55	40	21.77	22.07	1,670(11.51)	1,950(13.44)
6	168.3	±1.6	7.11	40	28.26	28.58	1,520(10.48)	1,780(12.27)
8	219.1	±2.1	7.04	30	36.31	38.07	1,160(7.80)	1,350(9.31)
			8.18	40	42.55	43.73	1,340(9.24)	1,570(10.82)

**Wall Thickness of 3.18 mm. , 3.96 mm. , 4.78 mm. , 5.16 mm. , 5.56 mm. , 6.35 mm.**

3	88.9	±0.8	3.18	-	6.72	-	1,290(8.89)	-
			3.96	-	8.29	-	1,600(11.03)	-
			4.78	-	9.92	-	1,930(13.31)	-
3 1/2	101.6	±1.0	3.18	-	7.72	-	1,120(7.72)	-
			3.96	-	9.53	-	1,400(9.65)	-
			4.78	-	11.41	-	1,690(11.65)	-
4	114.3	±1.1	3.18	-	8.71	-	1,000(6.89)	-
			3.96	-	10.78	-	1,250(8.62)	-
			4.78	-	12.91	-	1,500(10.34)	-
			5.56	-	14.91	-	1,750(12.07)	-
5	141.3	±1.4	3.96	-	13.41	-	1,010(6.96)	-
			4.78	-	16.09	-	1,220(8.41)	-
			5.56	-	18.61	-	1,420(9.79)	-
6	168.3	±1.6	4.78	-	19.27	-	1,020(7.03)	-
			5.56	-	22.31	-	1,190(8.20)	-
			6.35	-	25.36	-	1,360(9.38)	-
8	219.1	±2.1	4.78	-	25.26	-	780(5.38)	-
			5.16	-	27.22	-	850(5.86)	-
			5.56	-	29.28	-	910(6.27)	-
			6.35	-	33.31	-	1,040(7.17)	-

1 Mpa = 1.01972 x 10 kgf/cm<sup>2</sup>

Chemical Composition					Mechanical Properties	
Type E (ERW)	C max. %	Mn max. %	P max. %	S max. %	Tensile Strength(min) PSI (Mpa)	Yield Strangth PSI (Mpa)
GRADE A	0.25	0.95	0.05	0.05	48,000(330)	30,000(205)
GRADE B	0.30	1.20	0.05	0.05	60,000(415)	35,000(240)

**DIMENSION TOLERANCES :**

Permissible Variation	
Wall Thickness	: - 12.5 % + not specified
Length	: + 40 mm. - 0 mm.
Weight	: ± 10 % per piece





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3

QMS47014 No.2

**STANDARD BS 1387 : 1985 LIGHT CLASS BLACK & GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread inch	Outside diameter		Thickness mm.	Mass of black tube	
		max. mm.	min. mm.		Plain end kg / m	Screwed and socketed kg / m
15	1/2	21.4	21.0	2.0	0.947	0.956
20	3/4	26.9	26.4	2.3	1.38	1.39
25	1	33.8	33.2	2.6	1.98	2.00
32	1-1/4	42.5	41.9	2.6	2.54	2.57
40	1-1/2	48.4	47.8	2.9	3.23	3.27
50	2	60.2	59.6	2.9	4.08	4.15
65	2-1/2	76	75.2	3.2	5.71	5.83
80	3	88.7	87.9	3.2	6.72	6.89
100	4	113.9	113.0	3.6	9.75	10.00

**STANDARD BS 1387 : 1985 MEDIUM CLASS BLACK & GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread inch	Outside diameter		Thickness mm.	Mass of black tube	
		max. mm.	min. mm.		Plain end kg / m	Screwed and socketed kg / m
15	1/2	21.7	21.1	2.6	1.21	1.22
20	3/4	27.2	26.6	2.6	1.56	1.57
25	1	34.2	33.4	3.2	2.41	2.43
32	1-1/4	42.9	42.1	3.2	3.1	3.13
40	1-1/2	48.8	48.0	3.2	3.57	3.61
50	2	60.8	59.8	3.6	5.03	5.1
65	2-1/2	76.6	75.4	3.6	6.43	6.55
80	3	89.5	88.1	4.0	8.37	8.54
100	4	114.9	113.3	4.5	12.2	12.50
125	5	140.6	138.7	5.0	16.6	17.1
150	6	166.1	164.1	5.0	19.7	20.30

**STANDARD BS 1387 : 1985 HEAVY CLASS BLACK & GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread inch	Outside diameter		Thickness mm.	Mass of black tube	
		max. mm.	min. mm.		Plain end kg / m	Screwed and socketed kg / m
15	1/2	21.7	21.1	3.2	1.44	1.45
20	3/4	27.2	26.6	3.2	1.87	1.88
25	1	34.2	33.4	4.0	2.94	2.96
32	1-1/4	42.9	42.1	4.0	3.8	3.83
40	1-1/2	48.8	48.0	4.0	4.38	4.42
50	2	60.8	59.8	4.5	6.19	6.26
65	2-1/2	76.6	75.4	4.5	7.93	8.05
80	3	89.5	88.1	5.0	10.3	10.5
100	4	114.9	113.3	5.4	14.5	14.80
125	5	140.6	138.7	5.4	17.9	18.4
150	6	166.1	164.1	5.4	21.3	21.90

Chemical composition				Mechanical			Hydrostatic
C max. %	Mn max. %	P max. %	S max. %	Tensile Strength(min.) N / mm <sup>2</sup>	Yield Strength(min.) N / mm <sup>2</sup>	Elongation (min.) %	Test (min.) bar
0.20	1.20	0.045	0.045	320-460	195	20	50

1 bar = 1.01972 kgf / cm<sup>2</sup>

**DIMENSION TOLERANCES :**

Tolerance	Light Class	Medium Class	Heavy Class
Wall Thickness :	- 8 % + not specified	- 10 % + not specified	- 10 % + not specified
Length :	+ 50 mm., - 0 mm.		
Weight :	+ 10% , - 8% per piece / ± 4% per bundle (over 500 ft.)		



**UNITED STEEL PIPE CO.,LTD.**



TIS



Cert.No.11727 No.3 QMS47014 No.2

**STANDARD EN 10255 : 2004 BLACK AND HOT DIPPED GALVANIZED STEEL PIPES**

TUBE	Nominal Size (DN) mm.	Designation of thread inch	Outside diameter		Thickness mm.	Mass of black tube	
			max. mm.	min. mm.		Plain end kg / m	Screwed and socketed kg / m
TYPE - L	15	1/2	21.70	21.00	2.30	1.08	1.09
	20	3/4	27.10	26.40	2.30	1.40	1.41
	25	1	34.00	33.20	2.90	2.20	2.22
	32	1-1/4	42.70	41.90	2.90	2.82	2.85
	40	1-1/2	48.60	47.80	2.90	3.25	3.29
	50	2	60.70	59.60	3.20	4.51	4.58
	65	2-1/2	76.00	75.20	3.20	5.75	5.87
	80	3	88.70	87.90	3.20	6.76	6.93
	90	3-1/2*	101.20	100.30	3.60	8.70	8.88
	100	4	113.90	113.00	3.60	9.83	10.10
125	5	140.80	138.50	4.50	15.00	15.50	
150	6	166.50	163.90	4.50	17.80	18.40	
TYPE - L1	15	1/2	21.70	21.00	2.30	1.08	1.09
	20	3/4	27.10	26.40	2.30	1.39	1.40
	25	1	34.00	33.20	2.90	2.20	2.22
	32	1-1/4	42.70	41.90	2.90	2.82	2.85
	40	1-1/2	48.60	47.80	2.90	3.24	3.28
	50	2	60.70	59.60	3.20	4.49	4.56
	65	2-1/2	76.30	75.20	3.20	5.73	5.85
	80	3	89.40	87.90	3.60	7.55	7.72
100	4	114.90	113.00	4.00	10.80	11.10	
TYPE - L2	15	1/2	21.40	21.00	2.00	0.95	0.96
	20	3/4	26.90	26.40	2.30	1.38	1.39
	25	1	33.80	33.20	2.60	1.98	2.00
	32	1-1/4	42.50	41.90	2.60	2.54	2.57
	40	1-1/2	48.40	47.80	2.90	3.23	3.27
	50	2	60.20	59.60	2.90	4.08	4.15
	65	2-1/2	76.00	75.20	3.20	5.71	5.83
	80	3	88.70	87.90	3.20	6.72	6.89
100	4	113.90	113.00	3.60	9.75	10.00	
MEDIUM	15	1/2	21.80	21.10	2.60	1.21	1.22
	20	3/4	27.30	26.50	2.60	1.56	1.57
	25	1	34.20	33.30	3.20	2.41	2.43
	32	1-1/4	42.90	42.00	3.20	3.10	3.13
	40	1-1/2	48.80	47.90	3.20	3.56	3.60
	50	2	60.80	59.70	3.60	5.03	5.10
	65	2-1/2	76.60	75.30	3.60	6.42	6.54
	80	3	89.50	88.00	4.00	8.36	8.50
	100	4	115.00	113.10	4.50	12.20	12.50
	125	5	140.80	138.50	5.00	16.60	17.10
150	6	166.50	163.90	5.00	19.80	20.40	
HEAVY	15	1/2	21.80	21.10	3.20	1.44	1.45
	20	3/4	27.30	26.50	3.20	1.87	1.88
	25	1	34.20	33.30	4.00	2.93	2.95
	32	1-1/4	42.90	42.00	4.00	3.79	3.82
	40	1-1/2	48.80	47.90	4.00	4.37	4.41
	50	2	60.80	59.70	4.50	6.19	6.26
	65	2-1/2	76.60	75.30	4.50	7.93	8.05
	80	3	89.50	88.00	5.00	10.30	10.50
	100	4	115.00	113.10	5.40	14.50	14.80
	125	5	140.80	138.50	5.40	17.90	18.40
150	6	166.50	163.90	5.40	21.30	21.90	

Chemical composition				Mechanical			Hydrostatic
C max. %	Mn max. %	P max. %	S max. %	Tensile Strength(min.) N / mm <sup>2</sup>	Yield Strength(min.) N / mm <sup>2</sup>	Elongation (min.) %	Test (min.) bar
0.20	1.40	0.035	0.030	320-520	195	20	50

1 bar = 1.01972 kgf / cm<sup>2</sup>

**DIMENSION TOLERANCES :**

Color Making	Color Making ->	L1 Class	L2 Class	L Class	Medium Class	Heavy Class
L	Green	Wall Thickness :->	- 8 % + not specified	± 10 % + not specified		
L1	White					
L2	Brown	Weight : -->	- 8 %, + 10% on individual tubes	± 7.5 % on bundles of 10 tons		
M	Blue					
H	Red	Length : -->	+ 50 mm., - 0 mm.			



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**STANDARD JIS G 3452 : 1988 CARBON STEEL PIPES FOR ORDINARY PIPING**

Nominal Diameter		Outside Diameter mm.	Tolerances on Outside Diameter		Wall Thickness mm.	Tolerances On Thickness	Unit mass Plain Ends kg./ m.
A	B		Pipe to be cut In Taper Thread	Other Pipes			
15	1/2	21.7	± 0.5 mm.	± 0.5 mm.	2.8	+ Not Specified - 12.5%	1.31
20	3/4	27.2	± 0.5 mm.	± 0.5 mm.	2.8		1.68
25	1	34.0	± 0.5 mm.	± 0.5 mm.	3.2		2.43
32	1-1/4	42.7	± 0.5 mm.	± 0.5 mm.	3.5		3.38
40	1-1/2	48.6	± 0.5 mm.	± 0.5 mm.	3.5		3.89
50	2	60.5	± 0.5 mm.	± 0.5 mm.	3.8		5.31
65	2-1/2	76.3	± 0.7 mm.	± 0.75 mm.	4.2		7.47
80	3	89.1	± 0.8 mm.	± 0.85 mm.	4.2		8.79
90	3-1/2	101.6	± 0.8 mm.	± 1.0 mm.	4.2		10.10
100	4	114.3	± 0.8 mm.	± 1.1 mm.	4.5		12.20
125	5	139.8	± 0.8 mm.	± 1.3 mm.	4.5		15.00
150	6	165.2	± 0.8 mm.	± 1.6 mm.	5.0		19.80
200	8	216.3	± 1.0 mm.	± 1.7 mm.	5.8		30.10

Chemical Composition			Mechanical Properties (%)			
Letter Symbol of grade	P	S	Hydrostatic Testing (25.5 kgf./ cm <sup>2</sup> )	Tensile Strength N/mm. <sup>2</sup>	Elongation (%)	
	max.	max.			No.11, 12 Longitudinal	No.5 Transverse
SGP	0.040	0.040	2.5 Mpa	290 min.	30 min.	25 min.
Tolerances of Length : + 50 mm. - 0 mm.						



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**STANDARD JIS G 3454 CARBON STEEL PIPES FOR PRESSURE SERVICE**

Nominal Diameter		Outside Diameter mm.	Tolerances on Outside Diameter	Wall Thickness mm.	Tolerances On Thickness	Unit mass Plain Ends kg./ m.	Hydrostatic Test Pressure (bar)
A	B						
15	1/2	21.7	± 1.5 mm.	2.8	< 3.00 mm. ± 0.30 mm.  > 3.00 mm. ± 10 %	1.31	60
20	3/4	27.2	± 1.5 mm.	2.9		1.74	60
25	1	34.0	± 1.5 mm.	3.4		2.57	60
32	1-1/4	42.7	± 1.5 mm.	3.6		3.47	60
40	1-1/2	48.6	± 1.5 mm.	3.7		4.10	60
50	2	60.5	± 1.5 mm.	3.9		5.44	60
65	2-1/2	76.3	± 1.5 mm.	5.2		9.12	60
80	3	89.1	± 1.5 mm.	5.5		11.30	60
90	3-1/2	101.6	± 1.5 mm.	5.7		13.50	60
100	4	114.3	± 1.5 %	6.0		16.00	60
125	5	139.8	± 1.5 %	6.6		21.70	60
150	6	165.2	± 1.5 %	7.1		27.70	60
200	8	216.3	± 1.5 %	8.2		42.10	60

Chemical Composition					Mechanical Properties (%) (min.)		
Material of grade	C max.	Mn max.	P max.	S max.	Tensile Strength N/mm. <sup>2</sup>	Yield Strength N/mm. <sup>2</sup>	Elongation %
STPG 370	0.25	0.30-0.90	0.040	0.040	370	215	30
STPG 410	0.30	0.30-1.00	0.040	0.040	410	245	25



UNITED STEEL PIPE CO.,LTD.



TIS

ISO 9001 : 2008



Cert.No.11727



Cert.No.47014

**STANDARD TIS 276-2532 AND 277-2532 BLACK & GALVANIZED STEEL PIPE**

Nominal Size (DN)		Outside diameter		Wall Thickness	Calculated Weight Plain Ends	Threads Per 25.4 mm.
inch	mm.	min. mm.	max. mm.			
<b>TYPE 2</b>						
1/2	15	21.0	21.8	2.6	1.21	14
3/4	20	26.5	27.3	2.6	1.56	14
1	25	33.3	34.2	3.2	2.41	11
1-1/4	32	42.0	42.9	3.2	3.10	11
1-1/2	40	47.9	48.8	3.2	3.56	11
2	50	59.7	60.8	3.6	5.03	11
2-1/2	65	75.3	76.6	3.6	6.42	11
3	80	88.0	89.5	4.0	8.36	11
4	100	113.1	115.0	4.5	12.20	11
5	125	138.5	140.8	5.0	16.60	11
6	150	163.9	166.5	5.0	19.80	11

<b>TYPE 4</b>						
2-1/2	65	72.3	73.7	5.2	8.60	8
3	80	88.0	89.8	5.5	11.30	8
4	100	113.2	115.4	6.0	16.10	8
5	125	139.9	142.7	6.6	21.80	8
6	150	166.6	170.0	7.1	28.30	8
8" SCH30	200 ก	216.9	221.3	7.0	36.80	8
8" SCH40	200 ข			8.2	42.50	8

Chemical Composition				Mechanical			Hydrostatic Test (time 5 sec.)
C max. %	Mn max. %	P max. %	S max. %	Tensile Strength(min) N / mm <sup>2</sup>	Yield Strength(min) N / mm <sup>2</sup>	Elongation (mm.) %	
-	-	-	-	320	-	20	5

1 N / mm<sup>2</sup> = 1 Mpa = 1.01972 x 10 kgf / cm<sup>2</sup>

**DIMENSION TOLERANCES :**

Tolerance	TYPE 2	TYPE 4
Wall Thickness :	- 12.5% + Not Limit	
Length :	+ 50 mm. , - 0 mm.	
Weight :	+ 10%, - 8% Per Meter	± 5% Per Meter

<b>ตราอาร์ค</b>	<b>ประเภท 2 ขนาด 1/2" - 6"</b>	<b>ประเภท 4 ขนาด 2-1/2" - 8"</b>
<b>ประเภท 2 สีน้ำเงิน</b>	มอก.276 - 2532 ขนาด 1" (25) x 2.3 x 6,000 มม. ISO 9001 มอก.277 - 2532 ขนาด 1" (25) x 2.3 x 6,000 มม. ISO 9001	
<b>ประเภท 4 สีเขียว</b>	มอก.277 - 2532 ขนาด 8" (200) x 2.3 x 6,000 มม. ISO 9001	



# บริษัท ยูไนเท็ด สตีล ไพพ์ จำกัด



TIS



ISO 9001 : 2008

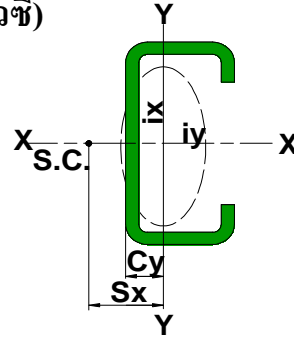
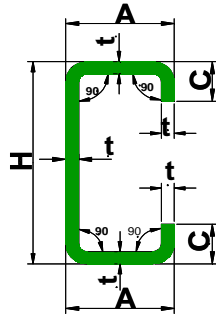
Cert.No.11727 No.3

QMS47014 No.2



มอก. 1228-2549 มาตรฐานผลิตภัณฑ์อุตสาหกรรมเหล็กโครงสร้างรูปพรรณ

ขัณรูปเย็น (เหล็กชุบตัวซี)



ขนาด mm.	ความหนา mm.	พื้นที่หน้าตัด cm <sup>2</sup>	มวลต่อเมตร kg/m.	ระยะจากศูนย์กลาง cm.		โมเมนต์ความเฉื่อย cm <sup>4</sup>		รัศมีจายเรชั่น cm.		มอดุลัสภาคตัด cm <sup>3</sup>		ระยะจากศูนย์กลางแรงเฉือน cm.	
H x A x C	t	a		Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
60 x 30 x 10	1.6	2.072	1.63	0	1.06	11.6	2.56	2.37	1.11	3.88	1.32	2.5	0
	2.0	2.537	1.99	0	1.06	14.0	3.01	2.35	1.09	4.65	1.55	2.5	0
	2.3	2.872	2.25	0	1.06	15.6	3.32	2.33	1.07	5.20	1.71	2.5	0
70 x 40 x 25	1.6	3.032	2.38	0	1.80	22.0	8.00	2.69	1.62	6.29	3.64	4.4	0
75 x 35 x 15	2.3	3.677	2.89	0	1.29	31.0	6.58	2.91	1.34	8.28	2.98	3.1	0
	1.6	2.952	2.32	0	1.72	27.1	8.71	3.03	1.72	7.24	3.13	4.1	0
	2.0	3.637	2.86	0	1.72	33.0	10.50	3.01	1.70	8.79	3.76	4.0	0
75 x 45 x 15	2.3	4.137	3.25	0	1.72	37.1	11.80	3.00	1.69	9.90	4.24	4.0	0
	1.6	3.352	2.63	0	1.73	42.6	10.50	3.56	1.77	9.46	5.80	4.2	0
	2.3	4.712	3.70	0	1.73	58.6	14.20	3.53	1.74	13.00	5.14	4.1	0
90 x 45 x 20	3.2	6.367	5.00	0	1.72	76.9	18.30	3.48	1.69	17.10	6.57	4.1	0
	1.6	3.672	2.88	0	1.87	58.4	14.00	3.99	1.95	11.70	4.47	4.5	0
	2.0	4.537	3.56	0	1.86	71.4	16.90	3.97	1.93	14.30	5.40	4.4	0
100 x 50 x 20	2.3	5.172	4.06	0	1.86	80.7	19.00	3.95	1.92	16.10	6.06	4.4	0
	2.8	6.205	4.87	0	1.88	99.8	23.20	3.96	1.91	20.00	7.44	4.3	0
	3.2	7.007	5.50	0	1.86	107.0	24.50	3.90	1.87	21.30	7.81	4.4	0
	4.0	8.548	6.71	0	1.86	127.0	28.70	3.85	1.83	25.40	9.13	4.3	0
	4.5	9.469	7.43	0	1.86	139.0	30.90	3.82	1.81	27.70	9.82	4.3	0
120 x 40 x 20	3.2	7.007	5.50	0	1.32	144.0	15.30	4.53	1.48	24.00	5.71	3.4	0
120 x 60 x 20	2.3	6.092	4.78	0	2.13	140.0	31.30	4.79	2.27	23.30	8.10	5.1	0
	3.2	8.287	6.51	0	2.12	186.0	40.90	4.74	2.22	31.00	10.50	4.9	0
120 x 60 x 25	4.5	11.720	9.20	0	2.25	252.0	58.00	4.63	2.22	41.90	15.50	5.3	0
125 x 50 x 20	2.3	5.747	4.51	0	1.69	137.0	20.60	4.88	1.89	21.90	6.22	4.1	0
	3.2	7.807	6.13	0	1.68	181.0	26.60	4.82	1.85	29.00	8.02	4.0	0
	4.0	9.548	7.50	0	1.68	217.0	33.10	4.77	1.81	34.70	9.38	4.0	0
	4.5	10.590	8.32	0	1.68	238.0	33.50	4.74	1.78	38.00	10.00	4.0	0
150 x 50 x 20	2.3	6.322	4.96	0	1.55	210.0	21.90	5.77	1.86	28.00	6.33	3.8	0
	3.2	8.607	6.76	0	1.54	280.0	28.30	5.71	1.81	37.40	8.19	3.8	0
	4.5	11.720	9.20	0	1.54	368.0	35.70	5.60	1.75	49.00	10.50	3.7	0
150 x 65 x 20	2.3	7.012	5.50	0	2.12	248.0	41.10	5.94	2.42	33.00	9.37	5.2	0
	3.2	9.567	7.51	0	2.11	332.0	53.80	5.89	2.37	44.30	12.20	5.1	0
	4.0	11.750	9.22	0	2.11	401.0	63.70	5.84	2.33	53.50	14.50	5.0	0
150 x 75 x 20	3.2	10.210	8.01	0	2.51	366.0	76.40	5.99	2.74	48.90	15.30	5.1	0
	4.0	12.550	9.85	0	2.51	445.0	91.00	5.95	2.69	59.30	18.20	5.8	0
	4.5	13.970	11.00	0	2.50	489.0	99.20	5.92	2.66	65.20	19.80	6.0	0
150 x 75 x 25	3.2	10.530	8.27	0	2.66	375.0	83.60	5.97	2.82	50.00	17.30	6.4	0
	4.0	12.950	10.20	0	2.65	455.0	99.80	5.93	2.78	60.60	20.60	6.3	0
	4.5	14.420	11.30	0	2.65	501.0	109.00	5.90	2.75	66.90	22.50	6.3	0
200 x 75 x 20	3.2	11.810	9.27	0	2.19	716.0	84.10	7.79	2.67	71.60	15.80	5.4	0
	4.0	14.550	11.40	0	2.19	871.0	100.00	7.74	2.62	87.10	18.90	5.3	0
	4.5	16.220	12.70	0	2.19	963.0	109.00	7.71	2.60	96.30	20.60	5.3	0
200 x 75 x 25	3.2	12.130	9.52	0	2.33	736.0	92.30	7.70	2.76	73.60	17.80	5.7	0
	4.0	14.950	11.70	0	2.32	895.0	110.00	7.74	2.72	89.50	21.30	5.7	0
	4.5	16.670	13.10	0	2.32	990.0	121.00	7.61	2.69	99.00	23.30	5.6	0
250 x 75 x 25	4.5	18.920	14.90	0	2.07	1690.0	129.00	9.44	2.62	135.00	23.80	5.1	0

เกณฑ์ความคลาดเคลื่อน

ขนาด	A ±1.5 มม.	H < 150 ±1.5 มม., 150 ถึง 300 มม. ±2.0 มม., > 300 ±3.0 มม.	C ±2.0 มม.
ความหนา (t)	1.6 มม. ±0.22 มม.	2.0 และ 2.3 มม. ±0.25 มม. 2.8 มม., ±0.28 มม. 3.2 มม., ±0.30 มม.	4.0 และ 4.5 มม., ±0.45 มม.
ความได้ลาดด้านประชิด	±1.5 องศา	ความโค้ง : ไม่เกิน 0.2% หรือ 12 มม.ของความยาวทั้งหมด	น้ำหนัก : ±10 %
ความยาว	: ไม่เกิน 7 เมตร +40, 0 ; เกิน 7 เมตร +40 มม. และ +5 มม. ในทุกๆ 1 เมตร หรือเศษของเมตร ของส่วนที่ยาวเกิน 7 เมตร		

ชั้นคุณภาพ	คุณสมบัติทางเคมี			คุณสมบัติทางกล		
	คาร์บอน สูงสุด %	กำมะถัน สูงสุด %	ฟอสฟอรัส สูงสุด %	ความต้านแรงดึงที่จุดครากต่ำสุด เมกะพาสคัล	ความต้านแรงดึง เมกะพาสคัล	ความยืด ต่ำสุด ร้อยละ ความหนา ไม่เกิน 5 มิลลิเมตร
SSC400	0.25	0.05	0.05	245	400 ถึง 540	21



UNITED STEEL PIPE CO.,LTD.



TIS

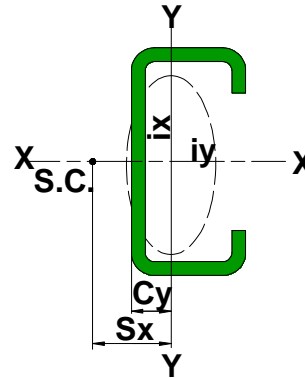
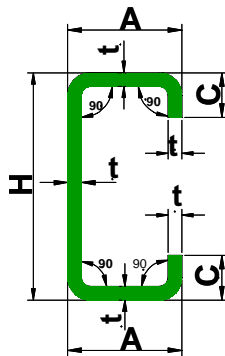
ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2



**STANDARD JIS G 3350 : 1987 LIGHT GAUGE STEEL FOR GENERAL STRUCTURE (Lip Channel Steel)**

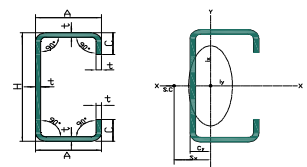
Dimensions (mm.)	Thickness	Sectional	Unit mass		Dimensions (mm.)	Thickness	Sectional	Unit mass
H x A x C	mm.	cm. <sup>2</sup>	kg./ m.		H x A x C	mm.	cm. <sup>2</sup>	kg./ m.
60 x 30 x 10	1.6	2.072	1.63	125 x 50 x 20	2.3	5.747	4.51	
	2.0	2.537	1.99		3.2	7.807	6.13	
	2.3	2.872	2.25		4.0	9.548	7.50	
70 x 40 x 25	1.6	3.032	2.38	150 x 50 x 20	4.5	10.590	8.32	
	75 x 35 x 15	2.3	3.677		2.89	2.3	6.322	4.96
1.6		2.952	2.32		3.2	8.607	6.76	
75 x 45 x 15	2.0	3.637	2.86	4.5	11.720	9.20		
	2.3	4.137	3.25	150 x 65 x 20	2.3	7.012	5.50	
	1.6	3.352	2.63		3.2	9.567	7.51	
2.3	4.712	3.70	4.0		11.750	9.22		
90 x 45 x 20	3.2	6.367	5.00	150 x 75 x 20	3.2	10.210	8.01	
	1.6	3.672	2.88		4.0	12.550	9.85	
	2.0	4.537	3.56		4.5	13.970	11.00	
100 x 50 x 20	2.3	5.172	4.06	150 x 75 x 25	3.2	10.530	8.27	
	2.8	6.205	4.87		4.0	12.950	10.20	
	3.2	7.007	5.50		4.5	14.420	11.30	
	4.0	8.548	6.71	200 x 75 x 20	3.2	11.810	9.27	
	4.5	9.469	7.43		4.0	14.550	11.40	
120 x 40 x 20	3.2	7.007	5.50	4.5	16.220	12.70		
120 x 60 x 20	2.3	6.092	4.78	200 x 75 x 25	3.2	12.130	9.52	
	3.2	8.287	6.51		4.0	14.950	11.70	
120 x 60 x 25	4.5	11.720	9.20		4.5	16.670	13.10	

Symbol of Class	Chemical Composition				Mechanical Properties		
	C Max. %	Mn Max. %	P Max. %	S Max. %	Tensile Strength T.S. N/mm. <sup>2</sup> (min.)	Yield Strength Y.S. N/mm. <sup>2</sup> (min.)	Elongation (min.) %
SSC400	0.25	-	0.050	0.050	400-540	245	21

**DIMENSION TOLERANCES :**

**Shape and Tolerances on Dimensions**

Thickness	:	1.6 mm. : ± 0.22 mm. , 2.0 mm.& 2.3 mm. : ± 0.25 mm. 2.8 mm. : ± 0.28 mm. , 3.2 mm. : ± 0.30 mm. 4.0 mm. & 4.5 mm. : ± 0.45 mm. , 6.0 mm. : ± 0.60 mm.
Length	:	7 m. or under : + 40 mm. - 0 mm.
Height H	:	Under 150 mm. : ± 1.5 mm. 150 mm. or over to 300 mm. : ± 2.0 mm.
Side A	:	± 1.5 mm.
Lip C	:	± 2.0 mm.
Angle between adjacent plate parts	:	± 1.5°





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**STANDARD USP SQUARE AND RECTANGULAR CARBON STEEL PIPES FOR GENERAL STRUCTURAL PURPOSES**

DESIGNATION		Calculated Weight (kg./ m.) Thickness (mm.)													
SQUARE	RECTANGULAR														
mm.	mm.	1.2	1.4	1.7	1.95	2.0	2.3	2.5	2.7	2.9	3.2	3.5	4.0	4.5	
19x19		0.64	0.73	0.86	0.97	0.99	1.10	1.17							
25x25		0.87	1.00	1.19	1.33	1.36	1.53	1.64							
32x32		1.13	1.31	1.56	1.76	1.80	2.04	2.19							
	38x19	1.00	1.15	1.37	1.55	1.58	1.79	1.91							
	40x20	1.06	1.22	1.45	1.64	1.68	1.89	2.03							
38x38		1.36	1.57	1.88	2.13	2.18	2.47	2.66	2.85						
40x40		1.43	1.66	1.99	2.25	2.31	2.62	2.82	3.01						
	50x25	1.34	1.55	1.85	2.10	2.15	2.44	2.62	2.80						
50x50		1.81	2.10	2.52	2.87	2.93	3.34	3.60	3.86	4.12	4.50				
	60x30	1.62	1.88	2.25	2.56	2.62	2.98	3.21	3.44	3.66	3.99				
	75x38		2.38	2.87	3.26	3.34	3.81	4.11	4.41	4.71	5.15				
75x75	100x50		3.20	3.85	4.40	4.50	5.14	5.56	5.98	6.40	7.01				
	125x50			4.52	5.16	5.29	6.05	6.55	7.04	7.53	8.26	8.98	10.16	11.32	
	125x75			5.19	5.93	6.07	6.95	7.53	8.10	8.67	9.52	10.36	11.73	13.08	
100x100	150x50			5.19	5.93	6.07	6.95	7.53	8.10	8.67	9.52	10.36	11.73	13.08	
	150x75							8.51	9.16	9.81	10.78	11.73	13.30	14.85	
125x125	150x100							9.49	10.22	10.95	12.03	13.10	14.87	16.62	
150x150	200x100							11.45	12.34	13.22	14.54	15.85	18.01	20.15	

Mechanical Properties			DIMENSION TOLERANCES :	
Tensile	Yield	Elongation	Permissible Variation	
Strength (min.)	Strength (min.)	(min.)	Wall Thickness	:
N/mm. <sup>2</sup>	N/mm. <sup>2</sup>	%	Length	:
320	-	20	Weight	:
				± 10 %
				+ 50 mm. - 0 mm.
				± 10 % per piece





**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**STANDARD USP PIPE PLAIN END BLACK AND GALVANIZED STEEL PIPES**

Nominal Size (DN) in. (mm.)	Outside Diameter		Thickness			Weight Plain End STD. kg./ m	Nominal Size (DN) in. (mm.)	Outside Diameter		Thickness			Weight Plain End STD. kg./ m
	max. mm.	min. mm.	mm.					max. mm.	min. mm.	mm.			
			max.	STD.	min.					max.	STD.	min.	
1/2 (15)	20.8	20.2	1.32	1.2	1.08	0.571	2 (50)	59.6	58.8	1.32	1.2	1.08	1.72
			1.54	1.4	1.26	0.659				1.54	1.4	1.26	2.00
			1.87	1.7	1.53	0.788				1.87	1.7	1.53	2.41
3/4 (20)	26.4	25.8	1.32	1.2	1.08	0.74	2-1/2 (65)	75.8	74.8	2.20	2.0	1.80	2.82
			1.54	1.4	1.26	0.85				1.87	1.7	1.53	3.09
			1.87	1.7	1.53	1.02				2.20	2.0	1.80	3.62
1 (25)	32.8	32.0	1.32	1.2	1.08	0.92	3 (80)	88.4	87.4	2.64	2.4	2.16	4.31
			1.54	1.4	1.26	1.07				1.87	1.7	1.53	3.61
			1.87	1.7	1.53	1.29				2.20	2.0	1.80	4.24
			2.20	2.0	1.80	1.50				2.64	2.4	2.16	5.06
1-1/4 (32)	41.8	41.0	1.32	1.2	1.08	1.19	3-1/2 (90)	102.6	100.6	2.20	2.0	1.80	4.91
			1.54	1.4	1.26	1.38				2.75	2.5	2.25	6.11
			1.87	1.7	1.53	1.66				3.30	3.0	2.70	7.29
			2.20	2.0	1.80	1.94				2.64	2.4	2.16	6.56
1-1/2 (40)	47.8	47.0	1.32	1.2	1.08	1.37	4 (100)	113.8	112.8	3.30	3.0	2.70	8.16
			1.54	1.4	1.26	1.59	3.30	3.0	2.70	8.07			
			1.87	1.7	1.53	1.92	2.64	2.4	2.16	9.56			
			2.20	2.0	1.80	2.24	3.30	3.0	2.70	10.04			
6 (150)	165.0	163.0	2.64	2.4	2.16	9.56	8 (200)	218.0	214.6	3.74	3.4	3.06	17.85
			3.30	3.0	2.70	11.91				4.62	4.2	3.78	21.97
			3.30	3.0	2.70	11.91							

Size in	O.D. mm.	Tolerance mm.	Thickness mm.	Weight kg./ m.
1 ( A )	29.5	± 0.4	1.2	0.84
			1.4	0.97

DIMENSION TOLERANCES :	
Permissible Variation	
Wall Thickness :	± 10 %
Length :	+ 40 mm. - 0 mm.
Weight :	± 10 % per piece



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3 QMS47014 No.2

**STANDARD USP CLASS S BLACK AND GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread in.	Outside Diameter		Thickness			Mass of black tube	
		max. mm.	min. mm.	mm.			Plain end STD. kg. / m.	Screwed and socketed STD. kg. / m.
				max.	STD.	min.		
15	1/2	20.8	20.2	1.65	1.5	1.35	0.703	0.711
20	3/4	26.4	25.8	1.65	1.5	1.35	0.91	0.92
25	1	32.8	32.0	1.98	1.8	1.62	1.36	1.38
32	1-1/4	41.8	41.0	2.20	2.0	1.80	1.94	1.97
40	1-1/2	47.8	47.0	2.20	2.0	1.80	2.24	2.27
50	2	59.6	58.8	2.20	2.0	1.80	2.82	2.87
65	2-1/2	75.8	74.8	2.75	2.5	2.25	4.49	4.93
80	3	88.4	87.4	2.75	2.5	2.25	5.26	5.39
100	4	113.8	112.8	2.86	2.6	2.34	7.10	7.28
125	5	139.7	137.8	3.74	3.4	3.06	11.35	11.68
150	6	165.0	163.0	3.74	3.4	3.06	13.47	13.87

Mechanical Properties			DIMENSION TOLERANCES :	
Tensile Strength(min) N / mm <sup>2</sup>	Yield Strength(min) N / mm <sup>2</sup>	Elongation (min) %	Permissible Variation	
			320	---
			Length :	+ 40 mm. - 0 mm.
			Weight :	± 10 % per piece

1 bar = 1.01972 kgf / cm<sup>2</sup>



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

**STANDARD USP CLASS M BLACK AND GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread in.	Outside Diameter		Thickness			Mass of black tube	
		max. mm.	min. mm.	mm.			Plain end STD. kg. / m.	Screwed and socketed STD. kg. / m.
				max.	STD.	min.		
15	1/2	21.2	20.6	2.20	2.0	1.80	0.932	0.941
20	3/4	26.8	26.2	2.20	2.0	1.80	1.21	1.22
25	1	33.2	32.4	2.75	2.5	2.25	1.87	1.89
32	1-1/4	42.2	41.4	2.75	2.5	2.25	2.42	2.45
40	1-1/2	48.3	47.5	2.75	2.5	2.25	2.80	2.83
50	2	59.8	59.0	2.86	2.6	2.34	3.64	3.70
65	2-1/2	76.0	75.0	2.97	2.7	2.43	4.85	4.95
80	3	88.7	87.7	3.30	3.0	2.70	6.30	6.45
100	4	113.8	112.8	3.74	3.4	3.06	9.21	9.44
125	5	140.1	138.2	4.40	4.0	3.60	13.33	13.73
150	6	165.6	163.6	4.40	4.0	3.60	15.84	16.32

Mechanical Properties			DIMENSION TOLERANCES :	
Tensile Strength(min) N / mm <sup>2</sup>	Yield Strength(min) N / mm <sup>2</sup>	Elongation (min) %	Permissible Variation	
320	---	20	Wall Thickness :	± 10 %
			Length :	+ 40 mm. - 0 mm.
			Weight :	± 10 % per piece

1 bar = 1.01972 kgf / cm<sup>2</sup>



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3 QMS47014 No.2

**STANDARD USP CLASS A1 BLACK AND GALVANIZED STEEL PIPES**

Nominal Size (DN) mm.	Designation of thread in.	Outside Diameter		Thickness			Mass of black tube	
		max. mm.	min. mm.	mm.			Plain end STD. kg. / m.	Screwed and socketed STD. kg. / m.
				max.	STD.	min.		
15	1/2	20.9	20.5	2.09	1.9	1.71	0.881	0.890
20	3/4	26.7	26.2	2.20	2.0	1.80	1.21	1.22
25	1	32.8	32.2	2.53	2.3	2.07	1.71	1.73
32	1-1/4	41.8	41.2	2.53	2.3	2.07	2.22	2.25
40	1-1/2	48.1	47.5	2.75	2.5	2.25	2.79	2.83
50	2	59.6	59.0	2.75	2.5	2.25	3.50	3.56
65	2-1/2	75.9	75.0	3.08	2.8	2.52	5.02	5.12
80	3	88.5	87.7	3.19	2.9	2.61	6.09	6.25
100	4	113.6	112.8	3.52	3.2	2.88	8.68	8.90
125	5	139.7	137.8	3.96	3.6	3.24	12.00	12.35
150	6	165.0	163.0	3.96	3.6	3.24	14.24	14.67

Mechanical Properties			Hydrostatic Test (time 5 sec.) bar	DIMENSION TOLERANCES :	
Tensile Strength(min) N / mm <sup>2</sup>	Yield Strength(min) N / mm <sup>2</sup>	Elongation (min) %		Permissible Variation	
320	---	20	50	Wall Thickness :	± 10 %
				Length :	+ 40 mm. - 0 mm.
				Weight :	± 10 % per piece

1 bar = 1.01972 kgf / cm<sup>2</sup>



**UNITED STEEL PIPE CO.,LTD.**



ISO 9001 : 2008



Cert.No.11727 No.3

QMS47014 No.2

## STEEL PLATE

### Metric Size

Thickness	Unit Weight	Width x Length ft <sup>2</sup>		Thickness	Unit Weight	Width x Length ft <sup>2</sup>	
		Width x Length mm <sup>2</sup>				Width x Length mm <sup>2</sup>	
		4 x 8	5 x 10			4 x 8	5 x 10
mm.	Kg/m <sup>2</sup>	1219 x 2438	1524 x 3048	mm.	Kg/m <sup>2</sup>	1219 x 2438	1524 x 3048
1.00	7.85	23.3	36.5	6.00	47.10	140.0	218.8
1.20	9.42	28.0	43.8	6.50	51.03	151.6	237.0
1.40	10.99	32.7	51.1	7.00	54.95	163.3	255.3
1.60	12.56	37.3	58.3	7.40	58.09	172.6	269.8
1.80	14.13	42.0	65.6	7.50	58.88	175.0	273.5
2.00	15.70	46.7	72.9	8.00	62.80	186.6	291.7
2.30	18.06	53.7	83.9	8.50	66.73	198.3	309.9
2.50	19.63	58.3	91.2	9.00	70.65	210.0	328.2
2.60	20.41	60.7	94.8	9.50	74.58	221.6	346.4
2.80	21.98	65.3	102.1	10.00	78.50	233.3	364.6
2.90	22.77	67.7	105.7	10.50	82.43	245.0	382.9
3.00	23.55	70.0	109.4	11.00	86.35	256.6	401.1
3.20	25.12	74.7	116.7	11.50	90.28	268.3	419.3
3.40	26.69	79.3	124.0	12.00	94.20	280.0	437.6
3.50	27.48	81.7	127.6	12.50	98.13	291.6	455.8
3.70	29.05	86.3	134.9	13.00	102.05	303.3	474.0
4.00	31.40	93.3	145.9	13.50	105.98	314.9	492.3
4.30	33.76	100.3	156.8	14.00	109.90	326.6	510.5
4.50	35.33	105.0	164.1	14.50	113.83	338.3	528.7
5.00	39.25	116.6	182.3	15.00	117.75	349.9	547.0
5.30	41.61	123.6	193.3	15.50	121.68	361.6	565.2
5.50	43.18	128.3	200.6	16.00	125.60	373.3	583.4

ความต้านแรงดึงและความยืด					ส่วนประกอบทางเคมี	
ชั้นคุณภาพ	ความต้านแรงดึงที่จุดคราก ไม่เกิน 16 มิลลิเมตร	ต้านแรงดึง เมกะพาสคัล	ความหนา มิลลิเมตร	ความยืด ร้อยละ ต่ำสุด	ฟอสฟอรัส ร้อยละ สูงสุด	กำมะถัน ร้อยละ สูงสุด
SS330	205	330 ถึง 430	ไม่เกิน 5	26	0.05	0.05
			มากกว่า 5 ถึง 16	21		
SS400	245	400 ถึง 510	ไม่เกิน 5	21	0.05	0.05
			มากกว่า 5 ถึง 16	17		

CODE : STEEL PLATE



**UNITED STEEL PIPE CO.,LTD.**



TIS

ISO 9001 : 2008



Cert.No.11727 No.3



QMS47014 No.2

## FLAT BAR

### Metric Size

ความกว้าง มิลลิเมตร	ความหนา (มิลลิเมตร) / น้ำหนักกิโลกรัมต่อเมตร							
	2.45	2.65	2.80	3.00	4.00	4.50	5.00	6.00
25	0.48	0.52	0.55	0.59	0.79	0.88	0.98	1.18
30	0.58	0.62	0.66	0.71	0.94	1.06	1.18	1.41
40	0.77	0.83	0.88	0.94	1.26	1.41	1.57	1.88
50	0.96	1.04	1.10	1.18	1.57	1.77	1.96	2.36
60	1.15	1.25	1.32	1.41	1.88	2.12	2.36	2.83
65	1.25	1.35	1.43	1.53	2.04	2.30	2.55	3.06
75	1.44	1.56	1.65	1.77	2.36	2.65	2.94	3.53
100	1.92	2.08	2.20	2.36	3.14	3.53	3.93	4.71

คุณสมบัติทางกล			คุณสมบัติทางเคมี %		
T.S. (min.) N/mm <sup>2</sup>	Y.S. (min.) N/mm <sup>2</sup>	E (min.) %	คาร์บอน สูงสุด	ฟอสฟอรัส สูงสุด	กำมะถัน สูงสุด
382	235	21	0.25	0.05	0.05

CODE : FLAT BAR