

PRODUCT CATALOGUE



MIG-MELEWAR



CERTIFIED TO ISO 9001:2008
CERT NO:AR 0994



MIG-MELEWAR

www.melewar-mig.com

MELEWAR STEEL TUBE SDN. BHD.

(111059-D)

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A Word About Steel Pipe

Pipes have played an important role in the advancement of civilization. It is recorded in history that clay pipes were first used in Babylon over 5,000 year ago. Copper tubes and lead pipes came after the clay pipes because these materials were comparatively easy to form into pipes. Following the invention of electrically welded steel pipes, thanks to modern science and technology, strong and durable welded steel pipes for a multitude of uses are available today. Besides its original function in the conveying of liquid and gas, pipes are also used as structural members in buildings, furniture, fence posts, lamp post, machinery and a host of other uses, all serving important phases of our daily lives.

Premises and Plants of Melewar Steel Tube Sdn. Bhd.

Headquarters



Factory 1



Factory 2



Factory 3



Factory 4



Company Profile

The year 1969 heralded the establishment of a Malaysian-Japanese joint venture into the steel pipe manufacturing industry with the establishment of Aurora Steel Tube Manufacturing Sdn Bhd. The Company went into production with one production line in January 1970 at its factory in Jalan Gudang, Shah Alam.

To mark the participation of Maruichi Steel Tube Ltd, Osaka, Japan in 1972, a new was adopted for the company - Maruichi Malaysia Steel Tube Sdn Bhd.

Within a matter of 2 years the company expanded its operations; a second factory equipped with additional production lines and hot dip galvanizing facilities went into operation on a 7 acre site in Jalan Utas, Shah Alam in 1974.

In 1975 the company was converted into a public company.

The Year 1982 saw the opening of the company's No. 3 factory at Persiaran Selangor, Shah Alam and the commencement of operation of the company's 100% owned subsidiary, Tokyo Steel Wire Sdn Bhd, also in Shah Alam.

Maruichi Malaysia Steel Tube Bhd was listed on the Kuala Lumpur Stock Exchange in 1986. Our Corporate headquarters and the latest No. 5 factory was built at Persiaran Selangor in 1990. That same year also marked the commencement of operations of our wholly owned subsidiary, Cold Rolling Industry (Malaysia) Sdn Bhd, the first Cold Rolled Coil manufacturer in Malaysia.

Following a change in ownership, the company was renamed as Melewar Industrial Group Berhad (MIG) in November 2003. Product brand was also changed to MIG – MELEWAR.

Presently Melewar Steel Tube Sdn. Bhd. has an installed capacity of more than 18,600 tonne per month with the ability to manufacture pipes from 9mm to 400mm O.D. MIG's products are widely used in the construction, furniture, automotive, bicycle and engineering industries. Today, after more than three decades of experience in the steel pipe industry, the brand MIG-MELEWAR spells quality, having made its name in the steel industry where its products are highly acclaimed by both local as well as international users.

Main Products

CLASSIFICATION	SPECIFICATIONS	USES
Black and Carbon Steel Pipe, Square and Rectangular Hollow Section	BS EN 10255 / BS 1387 JIS G 3466 JIS G 3444 JIS G 3445 JIS G 3472 JIS G 3452 ASTM A 53 ASTM A 500 BS EN 10219 ASTM A 252 MANUFACTURER'S STANDARD	For bicycle, vehicles, agricultural implements, civil engineering, steel towers, furniture, mining industries, etc
Gas and Water Pipe	BS EN 10255 / BS 1387 MS 863 SPAN TS 21827:PART 2 BS EN 10224 JIS G 3452 ASTM A 53 BS EN 10219 MANUFACTURER'S STANDARD	For carrying gas, water, steam, oil, air, etc
Galvanised Steel Conduit	BS 31 BS 4568 / MS 275 MS IEC 61386-1 & MS 61386-21 MANUFACTURER'S STANDARD	For electrical wiring
Light Gauge Steel Plain and Lipped Channel	JIS G 3350 MANUFACTURER'S STANDARD	For civil engineering, transportation & electrical communication equipment, machinery etc.
Hot Rolled Steel Plate and Sheet Cold Rolled Steel Sheet	JIS G 3141 SPCC JIS G 3101 SS400 JIS G 3131 JIS G 3132 SPHT BS EN 10025 S275 JR, J0, J2 BS EN 10025 S355 JR, J0, J2 MANUFACTURER'S STANDARD	For furniture constructions, engineering, electrical appliances, etc

Quality Products



Black Welded Steel Pipes



Hot-Dipped Galv Pipes



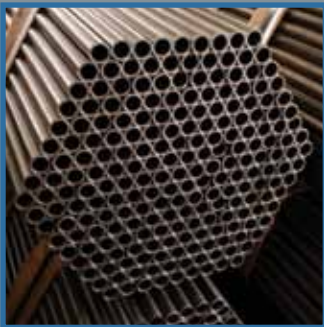
Square Pipes



Rectangular Pipes



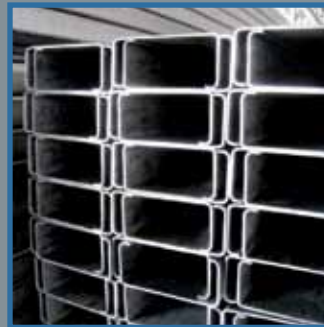
Electrical Steel Conduit



Furniture Tubes



Mechanical Tubes



Lipped Channels



Slit Coils



U Channels



Gate Channels



Door Rail Track



Trolley Track

Quality Recognition

QUALITY MANAGEMENT SYSTEM (QMS)

Melewar Steel Tube Sdn.Bhd strives to improve its operations and has always endeavoured to meet its customer's expectation. In 1997 MST achieved its ISO 9001 certification. Over the years, the effectiveness of the quality management system itself has been improved in order to adapt to the latest global challenges. In 2010, MST upgraded its Quality Management System to ISO 9001:2008 and this was accredited by SIRIM with IQNet certification.



ISO 9001 : 2008



SIRIM ISO 9001 : 2008

PRODUCT CERTIFICATION

Our quality products meet with the requirements of many international standards. Among them are as follows:



- British Standard
- British Standard BS EN 10255:2004 for Welded Steel Pipes (Black & Galvanised)



- British Standard
- BS 31:1940 for Steel Conduits for Electrical Wiring



- Japanese Standard
- JIS G3452:2010 for Carbon Steel Pipes For Ordinary Piping (Black & Galvanised)



- Japanese Standard
- JIS G3350:1987 for Light Gauge Steel For General Structural Class SSC 400



- Japanese Standard
- JIS G3445:1988 for Carbon Steel Tube for Machine Structural Purposes Grade STKM 11A



- American Standard
- ASTM A500/A500M:2013 for Cold Formed Welded Carbon Steel Structural Tubing in Round and Shape



- American Standard
- ASTM A252-98:2007 for Welded Steel Pipe Piles



- Malaysia Standard
- MS IEC 61386-1 / MS 61386-21 for Rigid Conduit System for Cable Management

To meet local demands, many of our quality products are certified under Malaysian Standards as follows:



- Malaysia Standard
- MS 863:1983 for Welded Steel Pipes (Black & Galvanised)



- Malaysia Standard
- SPAN TS 21827: PART 2:2013 for Non-Alloy Steel Tube for Water and Sewerage



- EC Factory Production Control Certificate
- EN 10219-1:2006 for Cold Formed Welded Structural Hollow Section of Non-Alloy Steels.



Product Specification Table

Specification	Shapes	Grade	Chemical Composition % (Max)					Mechanical Properties (Min)		
			C	Si	Mn	P	S	Yield (MPa)	Tensile (MPa)	Elongation %
BS EN 10255:2004	Round	L1,L2,M,H	0.20	-	1.40	0.035	0.030	195	320 - 520	20
MS 863:2004	Round	L,M,H	-	-	-	0.060	0.060	-	320 - 520	20
BS 1387:1985	Round	L,M,H	0.20	-	1.20	0.045	0.045	195	320 - 460	20
JIS G 3452:2010	Round	-	-	-	-	0.040	0.040	-	290	30
BS 1139:1990	Round	-	0.20	0.30	-	0.050	0.050	235	340 - 480	24
BS 534:1990	Round	430	0.21	0.35	0.40 - 1.20	0.040	0.040	275	430 - 570	22
BS EN 10224:2002 / MS 1968:2007	Round	L 235	0.16	0.35	1.20	0.030	0.025	235	360 - 500	25 ^A , 23 ^B
		L 275	0.20	0.40	1.40	0.030	0.025	275	430 - 570	21 ^A , 19 ^B
		L 355	0.22	0.55	1.60	0.030	0.025	355	500 - 650	21 ^A , 19 ^B
BS 31:1940 (Conduit : Imperial)	Round	-	-	-	-	-	-	-	278 - 371	15
BS 4568:Part1:1970 (Conduit : Metric)	Round	-	-	-	-	-	-	-	-	-
ASTM A - 500	Round	A	0.30	-	-	0.045	0.045	228	310	25
		B	0.30	-	-	0.045	0.045	290	400	23
		C	0.27	-	1.35	0.035	0.035	317	427	21
		D	0.30	-	-	0.045	0.045	250	400	23
	Square, Rectangular	A	0.30	-	-	0.045	0.045	269	310	25
		B	0.30	-	-	0.045	0.045	317	400	23
		C	0.27	-	1.35	0.035	0.035	345	427	21
		D	0.30	-	-	0.045	0.045	250	400	23
BS EN 10219:2006	Round, Square, Rectangular	S235	0.17	-	1.40	0.045	0.045	235	360-510 ⁽⁻⁾ ,340-470 ⁽⁺⁾	24
		S275	0.20	-	1.50	0.040	0.040	275	430-580 ⁽⁻⁾ ,410-560 ⁽⁺⁾	20
		S355	0.22	0.55	1.62	0.040	0.040	355	510-680 ⁽⁻⁾ ,470-630 ⁽⁺⁾	20
AS 1163:2009	*Round, Square, Rectangular	250	0.12	0.05	0.50	0.040	0.030	250	320	*22, 18
		350	0.20	0.25	1.60	0.040	0.300	350	430	*20, 16
		450	0.20	0.45	1.60	0.040	0.300	450	500	*16, 14
JIS G 3466:2006	Square, Rectangular	STKR 400	0.25	-	-	0.040	0.040	245	400	23
		STKR 490	0.18	0.55	1.50	0.040	0.040	325	490	23
JIS G 3444:2006	Round	STK 290	-	-	-	0.050	0.050	-	290	30 ^A , 25 ^B
		STK 400	0.25	-	-	0.040	0.040	235	400	23 ^A , 18 ^B
		STK 490	0.18	0.55	1.50	0.040	0.040	315	490	23 ^A , 18 ^B
		STK 500	0.24	0.35	0.30 - 1.30	0.040	0.040	355	500	15 ^A , 10 ^B
JIS G 3445:1988	Round	STKM 11A	0.12	0.35	0.60	0.040	0.040	-	290	30
JIS G 3472:2007	Round	STAM290GA	0.12	0.35	0.60	0.035	0.035	175	290	40
		STAM290GB								35
JIS G 3350:1987	Channel	SSC 400	0.25	-	-	0.050	0.050	245	400 - 540	21
ASTM A 252 - 98 (2007)	Round	Grade 1	-	-	-	0.050	-	205	345	30 (Gauge length:2")
		Grade 2	-	-	-	0.050	-	240	414	25 (Gauge length:2")
		Grade 3	-	-	-	0.050	-	310	455	20 (Gauge length:2")

Remarks: A = longitudinal direction, B = Transverse direction , (-) = T < 3mm , (+) = 3mm ≤ T ≤ 40mm

Technical Details Of BS EN 10255 : 2004 (supersedes BS 1387 : 1985)

TYPE L2 (LIGHT SERIES), MEDIUM SERIES, HEAVY SERIES & TYPE L1

Our Black and Galvanised pipes are produced to MS 863 : 2010 / BS EN 10255 : 2004 / BS 1387 : 1985 / MANUFACTURER'S STANDARD on our precision electric-resistance-weld tube mills, by using prime quality steel.

GENERAL INFORMATION ON BS EN 10255 : 2004 [SUPERSEDES BS 1387 : 1985] WELDED STEEL TUBE

DESCRIPTIONS MIG - MELEWAR BS EN 10255 : 2004 (BS 1387 :1985) welded steel tube is produced in three series : Type L2 (Light Series), Medium, Heavy & Type L1. The tubes are available in black finished or hot-dipped galvanised finished in 6 meter or 6.4 meter uniform standard lengths.

APPLICATIONS For ordinary conveyance of steam, gas, air, water, etc.

END FINISH AND PROTECTION Plain-end square-cut (PE) or Threaded and socketed (T/C). PE tubes are chipped without any protection on both ends.T/C tubes are supplied screwed with taper threads to BS EN 10226 - 1 (BS 21) and fitted with one parallel-threaded malleable iron socket, as required under this specification.

IDENTIFICATION MARKING Tubes are marked by colour bands about 50mm wide, about 300mm from each end, as follow:
 TYPE L2 (LIGHT) - BROWN MEDIUM - BLUE
 HEAVY - RED TYPE L1 - WHITE

PERTINENT EXCERPTS FROM BS EN 10255 : 2004 (supersedes BS 1387 : 1985) SPECIFICATION

CHEMICAL COMPOSITION The chemical composition of the steel, by cast analysis, shall comply with the below:
 Carbon, C 0.20% max
 Manganese, Mn 1.40% max
 Phosphorus, P 0.035% max
 Sulphur, S 0.030% max

MECHANICAL PROPERTIES The mechanical properties at room temperature shall be as given below:
 Yield Strength (MPa) : 195 min
 Tensile Strength (MPa) : 320 to 520
 Elongation on gauge length $L_0 = 5.65 \sqrt{S_0}$ (%) : 20% min

TOLERANCES ON DIMENSION AND MASS
 Outside Diameter : As shown in Table on page
 Wall thickness : Type L2 (Light tubes) - 8%
 : Medium and Heavy tubes $\pm 10\%$
 : Type L1 - 8%
 Mass : + 10% or - 8% on individual tubes for Type L1 & L2
 : $\pm 7.5\%$ on bundles of 10 tons or more, for Medium and Heavy tubes

BEND TEST The bend test shall applied to bare tubes with specified outside diameter (D) of 17.2mm up to and including 60.3mm and shall be carried out in accordance with EN 10232 to an angle of 90 the groove in the forming tool shall have a width that fits the tube diameter accurately and a depth not less than 0.5 D. The radius at the bottom of the groove of the former shall be as given in Table below:

FLATTENING TEST The flattening test shall applied to bare tubes with specified outside diameter (D) greater than 60.3mm and shall be carried out in accordance with EN 10233. Welded tubes shall be flattened with the weld placed alternately at 0 or 90 (12 or 3 o'clock) to the direction of the flattening.

The tube shall be flattened in a press until the distance between platens, measured under load, reaches 75% of the original outside diameter of the tube. The tube shall show no cracks or flaws visible without magnifying aids.No cracks or flaws visible without magnifying aids shall occur in the metal other than in the weld until the distance between platens, measured under load, reaches 60% of the original outside diameter.

LEAK TIGHTNESS TEST At the discretion of the manufacturer, the test can be either a hydrostatic test at a minimum of 50 bar for at least 5 s , or an automatic electromagnetic testing.

NOTE: Special tubes sizes not stipulated in the BS specification may be made available upon request. Please feel free to enquire.

Welded Steel Pipes : Type L2 (Light Series)

MS 863 : 2010 / BS EN 10255 : 2004 / BS 1387 : 1985 (A) / MANUFACTURER'S STANDARD

NOMINAL DIAMETER DN	SPECIFIED OUTSIDE DIAMETER D mm	THREAD SIZE R	OUTSIDE DIAMETER		WALL THICKNESS T mm	CALCULATED MASS		NUMBER OF THREADS PER INCH	SOCKET LENGTH min mm	TEST PRESSURE BAR
			max	min		PLAIN END kg/m	THREADED & SOCKETED kg/m			
			mm	mm		mm	mm			
15	21.3	½	21.4	21.0	2.0	0.95	0.96	14	34.0	50
20	26.9	¾	26.9	26.4	2.3	1.38	1.39	14	37.0	50
25	33.7	1	33.8	33.2	2.6	1.98	2.00	11	43.0	50
32	42.4	1 ¼	42.5	41.9	2.6	2.54	2.57	11	48.0	50
40	48.3	1 ½	48.4	47.8	2.9	3.23	3.27	11	52.5	50
50	60.3	2	60.2	59.6	2.9	4.08	4.15	11	62.5	50
65	76.1	2 ½	76.0	75.2	3.2	5.71	5.83	11	71.5	50
80	88.9	3	88.7	87.9	3.2	6.72	6.89	11	77.0	50
100	114.3	4	113.9	113.0	3.6	9.75	10.00	11	91.0	50

Welded Steel Pipes : Medium Series (M)

MS 863 : 2010 / BS EN 10255 : 2004 / BS 1387 : 1985 (B) / MANUFACTURER'S STANDARD

NOMINAL DIAMETER DN	SPECIFIED OUTSIDE DIAMETER D mm	THREAD SIZE R	OUTSIDE DIAMETER		WALL THICKNESS T mm	CALCULATED MASS		NUMBER OF THREADS PER INCH	SOCKET LENGTH min mm	TEST PRESSURE BAR
			max	min		PLAIN END kg/m	THREADED & SOCKETED kg/m			
			mm	mm		mm	mm			
15	21.3	½	21.8	21.0	2.6	1.21	1.22	14	34.0	50
20	26.9	¾	27.3	26.5	2.6	1.56	1.57	14	37.0	50
25	33.7	1	34.2	33.3	3.2	2.41	2.43	11	43.0	50
32	42.4	1 ¼	42.9	42.0	3.2	3.10	3.13	11	48.0	50
40	48.3	1 ½	48.8	47.9	3.2	3.56	3.60	11	52.5	50
50	60.3	2	60.8	59.7	3.6	5.03	5.10	11	62.5	50
65	76.1	2 ½	76.6	75.3	3.6	6.42	6.54	11	71.5	50
80	88.9	3	89.5	88.0	4.0	8.36	8.53	11	77.0	50
100	114.3	4	115.0	113.1	4.5	12.20	12.50	11	91.0	50
125	139.7	5	140.8	138.5	5.0	16.60	17.10	11	105.5	50
150	165.1	6	166.5	163.9	5.0	19.80	20.40	11	116.5	50

Welded Steel Pipes : Heavy Series (H)

MS 863 : 2010 / BS EN 10255 : 2004 / BS 1387 : 1985 (C) / MANUFACTURER'S STANDARD

NOMINAL DIAMETER DN	SPECIFIED OUTSIDE DIAMETER D mm	THREAD SIZE R	OUTSIDE DIAMETER		WALL THICKNESS T mm	CALCULATED MASS		NUMBER OF THREADS PER INCH	SOCKET LENGTH min mm	TEST PRESSURE BAR
			max	min		PLAIN END kg/m	THREADED & SOCKETED kg/m			
			mm	mm		mm	mm			
15	21.3	½	21.8	21.0	3.2	1.44	1.45	14	34.0	50
20	26.9	¾	27.3	26.5	3.2	1.87	1.88	14	37.0	50
25	33.7	1	34.2	33.3	4.0	2.93	2.95	11	43.0	50
32	42.4	1 ¼	42.9	42.0	4.0	3.79	3.82	11	48.0	50
40	48.3	1 ½	48.8	47.9	4.0	4.37	4.41	11	52.5	50
50	60.3	2	60.8	59.7	4.5	6.19	6.26	11	62.5	50
65	76.1	2 ½	76.6	75.3	4.5	7.93	8.05	11	71.5	50
80	88.9	3	89.5	88.0	5.0	10.30	10.50	11	77.0	50
100	114.3	4	115.0	113.1	5.4	14.50	14.80	11	91.0	50
125	139.7	5	140.8	138.5	5.4	17.90	18.40	11	105.5	50
150	165.1	6	166.5	163.9	5.4	21.30	21.90	11	116.5	50

Welded Steel Pipes : Type L1

MS 863 : 2010 / BS EN 10255 : 2004 - Type of tubes with wall thickness different from Type L2, Medium and Heavy Series.

NOMINAL DIAMETER DN	SPECIFIED OUTSIDE DIAMETER D mm	THREAD SIZE R	OUTSIDE DIAMETER		WALL THICKNESS T mm	CALCULATED MASS		NUMBER OF THREADS PER INCH	SOCKET LENGTH min mm	TEST PRESSURE BAR
			max	min		PLAIN END kg/m	THREADED & SOCKETED kg/m			
			mm	mm		mm	mm			
15	21.3	½	21.7	21.0	2.3	1.08	1.09	14	34.0	50
20	26.9	¾	27.1	26.4	2.3	1.39	1.40	14	37.0	50
25	33.7	1	34.0	33.2	2.9	2.20	2.22	11	43.0	50
32	42.4	1 ¼	42.7	41.9	2.9	2.82	2.85	11	48.0	50
40	48.3	1 ½	48.6	47.8	2.9	3.24	3.28	11	52.5	50
50	60.3	2	60.7	59.6	3.2	4.49	4.56	11	62.5	50
65	76.1	2 ½	76.3	75.2	3.2	5.73	5.85	11	71.5	50
80	88.9	3	89.4	87.9	3.6	7.55	7.72	11	77.0	50
100	114.3	4	114.9	113.0	4.0	10.80	11.10	11	91.0	50

Welded Steel Pipes For General Purposes

Class AA - Manufacturer's Standard

Nominal Size		Nominal Wall Thickness*	Outside Diameter		Calculated Weight Plain Ends
mm	in		max	min	
mm	in	mm	mm	mm	kg/m
15	½	1.5	21.4	21.0	0.74
20	¾	1.5	26.9	26.4	0.94
25	1	1.5	33.8	33.2	1.19
32	1 ¼	1.5	42.5	41.9	1.52
40	1 ½	1.5	48.4	47.8	1.73
50	2	1.5	60.2	59.6	2.17
65	2 ½	1.5	76.0	75.2	2.76
80	3	1.9	88.7	87.9	4.07
90	3 ½	1.9	102.0	101.1	4.69
100	4	1.9	113.9	113.0	5.25
125	5	4.0	140.6	138.7	13.47
150	6	4.0	166.1	164.1	15.99

Manufacturer's Standard

Nominal Size		Nominal Wall Thickness*	Outside Diameter		Calculated Weight Plain Ends
mm	in		max	min	
mm	in	mm (Class)	mm	mm	kg/m
90	3 ½	3.3 (A)	101.1	100.3	7.96
		4.1 (B)	102.1	100.6	9.91
		5.1 (C)	102.1	100.6	12.20
125	5	3.0	140.6	138.7	10.18
		3.2	140.6	138.7	10.84
150	6	3.0	166.1	164.1	12.07
		3.2	166.1	164.1	12.85
175	7	4.5	192.3	189.1	20.84
200	8	4.5	218.0	214.6	23.50
250	10	4.5	269.5	265.3	29.17
		6.0	269.5	265.3	38.68

Note:

* Thickness tolerances: ± 12.5%

Carbon Steel Pipes For Ordinary Piping

JIS G 3452 /MANUFACTURER'S STANDARD

Nominal Size		Outside Diameter		Wall Thickness		Weight (Plain Ends)					Test Pressure	
mm	in	mm	in	mm	in	kg/m	kg/6m	kg/ft	lb/ft	lb/20ft	kg/cm²	psi
100	4	114.3	4.500	4.5	0.177	12.20	73.20	3.72	8.20	164	25	360
125	5	139.8	5.504	4.5	0.177	15.00	90.00	4.57	10.10	202	25	360
150	6	165.2	6.504	5.0	0.197	19.80	118.80	6.04	13.30	266	25	360
175	7	190.7	7.508	5.3	0.209	24.20	145.20	7.38	16.30	326	25	360
200	8	216.3	8.516	5.8	0.228	30.10	180.60	9.17	20.20	404	25	360
225	9	241.8	9.520	6.2	0.244	36.00	216.00	11.00	24.20	484	25	360
250	10	267.4	10.528	6.6	0.260	42.40	254.50	12.90	28.50	570	25	360
300	12	318.5	12.539	6.9	0.272	53.00	318.00	16.20	35.60	712	25	360
350	14	355.6	14.000	7.9	0.311	67.70	406.20	20.60	45.50	910	25	360
400	16	406.4	16.000	7.9	0.311	77.60	465.60	23.70	52.10	1042	25	360

Tolerance:

Wall Thickness + Not specified
- 12.50%

Electric Welded Non-alloy Steel Tubes for Cement Lined Pipes

SPAN TS21827:PART 2:2013 / BS EN 10224 / BS 534 / Manufacturer's Standard

Outside Diameter*	Minimum Wall Thickness*	Outside Diameter		Calculated Weight	Maximum Test Pressure
		max	min	Plain Ends	
mm	mm	mm	mm	kg/m	bar
114.3	3.6	115.4	113.2	9.83	70
139.7	3.6	141.1	138.3	12.08	70
168.3	3.6	170.0	166.6	14.62	70
193.7	4.0	195.2	192.2	18.71	70
219.1	4.0	221.3	216.9	21.22	70
244.5	4.0	246.3	242.7	23.72	70
273.0	4.0	275.0	271.0	26.53	64
323.9	4.0	326.3	321.5	31.55	54
355.6	4.5	358.3	352.9	38.96	56

Note:

* Other diameters and / or thicknesses may be available by agreement with the manufacturer.

The following sizes are also available upon request:

Outside Diameter*	Minimum Wall Thickness*	Outside Diameter		Calculated Weight
		max	min	Plain Ends
mm	mm	mm	mm	kg/m
121.9	4.1	123.1	120.7	11.91
152.4	4.0	153.9	150.9	14.64
177.3	4.1	178.6	176.0	17.51
232.2	4.1	233.9	230.5	23.06
286.0	4.1	288.2	283.9	28.50
345.4	5.8	348.0	342.8	48.57

British Standard Steel Tubes For Scaffolding

BS 1139:SECTION 1.1:1990

Nominal Size	Outside Diameter		Wall Thickness*	Calculated Weight	Cross-Sectional Area	Second Moment Of Inertia	Section Of Modulus Of Area	Radius Of Gyration	Plastic Modullus
	max	min							
mm	mm	mm	mm	kg/m	cm ²	cm ⁴	cm ³	cm	cm ³
48.3	48.8	47.8	4.0	4.37	5.57	13.80	5.70	1.57	7.87

Note:

* Thickness tolerances: ± 10%

Aurora Brand British Standard Galvanised Steel Conduit

BS 31 CLASS B (SCREWED)/MANUFACTURER'S STANDARD

NOMINAL SIZE	OUTSIDE DIAMETER				WALL THICKNESS				CALCULATED WEIGHT WITH COUPLER			NUMBERS OF THREADS PER INCH	LENGTH OF THREADS			
	MAXIMUM		MINIMUM		NOMINAL		MINIMUM		mm	in	mm		MAXIMUM		MINIMUM	
in	mm	in	mm	in	mm	in	mm	in	kg/m	kg/ft	lb/ft		mm	in	mm	in
¾	19.05	0.750	18.76	0.7387	1.63	0.064	1.52	0.060	0.713	0.217	0.479	16	14.3	0.5626	12.7	0.5000
1	25.40	1.000	25.11	0.9887	1.63	0.064	1.52	0.060	0.972	0.296	0.653	16	17.5	0.6875	15.9	0.6250
1¼	31.75	1.250	31.46	1.2387	1.63	0.064	1.52	0.060	1.240	0.376	0.830	16	19.1	0.7500	17.5	0.6875
1½	38.10	1.500	37.80	1.488	1.83	0.072	1.73	0.068	1.680	0.511	1.130	14	20.6	0.8125	19.1	0.7500
2	50.80	2.000	50.50	1.988	2.03	0.080	1.93	0.076	2.510	0.765	1.690	14	23.8	0.9375	22.2	0.8750

Standard Length 3.810 m (12ft. 6 in) without couples

FEATURES :

- * Made of hot - dip galvanised steel strip with extra-smooth surface and highly - adherent zinc coating by the unique tube - making process. The weld zone coating restored in line.
- * Inside weld bead controlled to a minimum for easier wire pulling.
- * Screwed on both ends to BS31 and fitted with a zinc - coated coupler or one end.
- * Packed in bare bundles, but the unsocketed ends protected with plastic caps
- * Easier to cut, thread, bend and pull. Dimensionally accurate. Uniform quality in every respect

MS 275 / BS 4568 CLASS 3 (SCREWED) / MANUFACTURER'S STANDARD

Certified by SIRIM.

NOMINAL SIZE	OUTER DIAMETER		WALL THICKNESS	CALCULATED WEIGHT WITH COUPLER		PITCH	LENGTH OF THREADS	
	MAXIMUM	MINIMUM		MAXIMUM	MINIMUM		MAXIMUM	MINIMUM
mm	mm	mm	mm	kg/m	kg/m	mm	mm	mm
20	20	19.7	1.6 ± 0.15	0.783	0.643	1.5	15	13
25	25	24.6	1.6 ± 0.15	0.995	0.811	1.5	18	16
32	32	31.6	1.6 ± 0.15	1.301	1.069	1.5	20	18

Preferred length of conduit 4.0 m. (Minimum 3.0 m, Maximum 4.0 m)

MS IEC 61386-1/ MS 61386-21 Conduit Systems for Cable Management.

Classification: 441611403410

NOMINAL SIZE	OUTER DIAMETER		INSIDE DIAMETER	EXTERNAL THREAD LENGTHS
	Max.	Min.		
mm	mm	mm	mm	mm
20	20.0	19.7	16.2	14.0
25	25.0	24.6	21.1	17.0
32	32.0	31.6	28.1	19.0

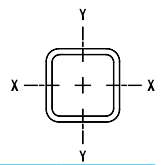
Electric Resistance Welded Steel Pipe Piles

ASTM A 252 - Grade 1, Grade 2 & Grade 3

Specified Outside Diameter		Nominal Wall Thickness	Weight per unit length	Cross Sectional Area	Second Moment Of Area	Radius Of Gyration	Elastic Section Modulus	Plastic Section Modulus	Torsional Inertia Constant	Torsional Modulus Constant	Superficial Area per metre length
D		T	M	A	I	i	W _{el}	W _{pl}	L _t	C _t	A _s
inch	mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m
6	152.4	3.40	12.50	15.92	442	5.27	58.0	75.5	884	115.98	0.479
		3.58	13.10	16.74	464	5.26	60.8	79.3	927	121.69	0.479
		3.96	14.50	18.47	509	5.25	66.8	87.3	1018	133.60	0.479
		4.17	15.20	19.42	534	5.24	70.0	91.6	1068	140.10	0.479
		4.37	16.00	20.32	557	5.24	73.1	95.8	1114	146.23	0.479
8 5/8	219.1	4.78	25.20	32.18	1849	7.58	168.8	219.6	3698	337.53	0.688
		5.16	27.20	34.68	1985	7.57	181.2	236.2	3971	362.46	0.688
		5.56	29.30	37.30	2127	7.55	194.2	253.6	4255	388.40	0.688
		6.35	33.30	42.44	2403	7.53	219.4	287.5	4807	438.78	0.688
		7.04	36.80	46.90	2639	7.50	240.9	316.7	5279	481.84	0.688
		7.92	41.20	52.54	2933	7.47	267.8	353.4	5867	535.51	0.688
		8.18	42.50	54.20	3019	7.46	275.6	364.1	6037	551.11	0.688
		8.74	45.30	57.76	3200	7.44	292.1	387.0	6401	584.29	0.688
10 3/4	273.1	9.52	49.20	62.68	3449	7.42	314.8	418.4	6897	629.59	0.688
		4.78	31.60	40.29	3627	9.49	265.6	344.2	7255	531.28	0.858
		5.16	34.10	43.43	3899	9.47	285.6	370.5	7799	571.11	0.858
		5.56	36.70	46.73	4183	9.46	306.3	398.0	8366	612.67	0.858
		5.84	38.50	49.03	4380	9.45	320.8	417.2	8760	641.53	0.858
		6.35	41.70	53.21	4736	9.43	346.8	451.9	9472	693.64	0.858
		7.09	46.60	59.25	5245	9.41	384.1	501.8	10489	768.15	0.858
		7.80	51.00	65.01	5725	9.38	419.2	549.2	11449	838.46	0.858
		8.74	57.00	72.59	6348	9.35	464.9	611.0	12696	929.76	0.858
12 3/4	323.9	9.27	60.30	76.83	6693	9.33	490.2	645.5	13387	980.36	0.858
		6.35	49.70	63.35	7988	11.23	493.2	640.4	15976	986.49	1.018
		7.14	55.50	71.05	8916	11.20	550.5	716.5	17832	1101.08	1.018
		7.92	61.70	78.62	9818	11.18	606.3	790.9	19637	1212.51	1.018
		8.38	65.20	83.07	10344	11.16	638.7	834.4	20688	1277.44	1.018
		8.74	67.90	86.54	10752	11.15	663.9	868.3	21504	1327.85	1.018
14	355.6	9.52	73.80	94.02	11627	11.12	717.9	941.2	23254	1435.85	1.018
		7.14	61.10	78.16	11869	12.32	667.5	867.1	23737	1335.05	1.117
		7.92	67.90	86.51	13078	12.30	735.6	957.5	26156	1471.12	1.117
		8.74	74.70	95.24	14332	12.27	806.1	1051.7	28664	1612.16	1.117
		9.52	81.20	103.51	15508	12.24	872.2	1140.5	31016	1744.43	1.117

Square Hollow Sections

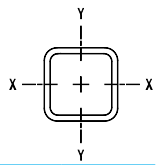
ASTM A-500 GRADES A & B / MANUFACTURER'S STANDARD



SIZE		WALL THICKNESS		CALCULATED WEIGHT		AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
NOMINAL	ACTUAL	mm	in	kg/m	kg/6m		I _x	I _y	Z _x	Z _y	i _x	i _y	S _x	S _y
mm	in	mm	in	kg/m	kg/6m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm	cm ³	cm ³
12 x 12	½ x ½	1.0	0.039	0.36	2.15	0.46	0.10	0.10	0.16	0.16	0.48	0.48	0.20	0.20
		1.2	0.047	0.42	2.53	0.54	0.12	0.12	0.19	0.19	0.47	0.47	0.23	0.23
		1.6	0.063	0.54	3.25	0.69	0.14	0.14	0.22	0.22	0.45	0.45	0.29	0.29
16 x 16	⅝ x ⅝	1.0	0.039	0.46	2.74	0.58	0.21	0.21	0.27	0.27	0.61	0.61	0.32	0.32
		1.2	0.047	0.54	3.25	0.69	0.25	0.25	0.31	0.31	0.60	0.60	0.38	0.38
		1.6	0.063	0.70	4.19	0.89	0.30	0.30	0.38	0.38	0.58	0.58	0.48	0.48
19 x 19	¾ x ¾	1.0	0.039	0.56	3.34	0.71	0.38	0.38	0.40	0.40	0.74	0.74	0.48	0.48
		1.2	0.047	0.66	3.95	0.84	0.45	0.45	0.47	0.47	0.73	0.73	0.56	0.56
		1.6	0.063	0.86	5.17	1.10	0.55	0.55	0.58	0.58	0.71	0.71	0.71	0.71
25 x 25	1 x 1	1.0	0.039	0.75	4.53	0.96	0.95	0.95	0.75	0.75	1.00	1.00	0.88	0.88
		1.2	0.047	0.90	5.38	1.14	1.11	1.11	0.88	0.88	0.99	0.99	1.04	1.04
		1.6	0.063	1.16	6.97	1.48	1.34	1.34	1.07	1.07	2.41	2.41	1.29	1.29
		2.3	0.091	1.60	9.61	2.04	1.75	1.75	1.40	1.40	2.36	2.36	1.73	1.73
		3.0	0.118	2.01	12.06	2.56	2.06	2.06	1.65	1.65	2.29	2.29	2.10	2.10
		3.2	0.126	2.15	12.88	2.74	2.25	2.25	1.77	1.77	0.91	0.91	2.26	2.26
32 x 32	1¼ x 1¼	1.2	0.047	1.13	6.81	1.45	2.24	2.24	1.41	1.41	1.24	1.24	1.66	1.66
		1.6	0.063	1.51	9.04	1.92	2.95	2.95	1.84	1.84	1.24	1.24	2.19	2.19
		2.3	0.091	2.11	12.67	2.69	3.93	3.93	2.46	2.46	1.21	1.21	2.98	2.98
		3.0	0.118	2.67	16.01	3.40	4.75	4.75	2.97	2.97	1.18	1.18	3.68	3.68
		3.2	0.126	2.83	16.96	3.60	4.95	4.95	3.10	3.10	1.17	1.17	3.86	3.86
38 x 38	1½ x 1½	1.2	0.047	1.37	8.23	1.75	3.96	3.96	2.08	2.08	1.50	1.50	2.41	2.41
		1.6	0.063	1.81	10.88	2.31	5.08	5.08	2.67	2.67	1.48	1.48	3.14	3.14
		2.3	0.091	2.54	15.26	3.24	6.85	6.85	3.61	3.61	1.45	1.45	4.32	4.32
		3.0	0.118	3.23	19.41	4.12	8.38	8.38	4.41	4.41	1.43	1.43	5.38	5.38
		3.2	0.126	3.41	20.48	4.35	8.78	8.78	4.62	4.62	1.42	1.42	5.67	5.67
50 x 50	2 x 2	1.6	0.063	2.42	14.51	3.08	12.00	12.00	4.79	4.79	1.97	1.97	5.57	5.57
		2.3	0.091	3.41	20.44	4.34	16.40	16.40	6.56	6.56	1.94	1.94	7.74	7.74
		3.0	0.118	4.25	25.48	5.41	19.50	19.50	7.79	7.79	1.90	1.90	9.39	9.39
		3.2	0.126	4.54	27.26	5.79	21.35	21.35	8.41	8.41	1.92	1.92	10.2	10.2
		4.0	0.157	5.46	32.73	6.95	23.70	23.70	9.49	9.49	1.85	1.85	11.7	11.7
		4.5	0.177	6.02	36.13	7.67	25.50	25.50	10.20	10.20	1.82	1.82	12.8	12.8
65 x 65	2½ x 2½	2.3	0.091	4.42	26.52	5.63	36.40	36.40	11.20	11.20	2.54	2.54	13.1	13.1
		3.0	0.118	5.66	33.96	7.21	45.40	45.40	14.00	14.00	2.51	2.51	16.6	16.6
		3.2	0.126	5.82	34.95	7.42	44.12	44.12	13.88	13.88	2.44	2.44	16.6	16.6
		4.0	0.157	7.34	44.04	9.35	56.60	56.60	17.40	17.40	2.46	2.46	21.0	21.0
		4.5	0.177	8.14	48.84	10.37	61.60	61.60	18.90	18.90	2.44	2.44	23.1	23.1
		6.0	0.236	10.39	62.31	13.23	73.90	73.90	22.70	22.70	2.36	2.36	28.5	28.5

Square Hollow Sections

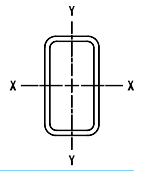
ASTM A-500 GRADES A & B / MANUFACTURER'S STANDARD



SIZE		WALL THICKNESS		CALCULATED WEIGHT		AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
NOMINAL	ACTUAL	mm	in	kg/m	kg/6m		I _x	I _y	Z _x	Z _y	i _x	i _y	S _x	S _y
mm	in	mm	in	kg/m	kg/6m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm	cm ³	cm ³
75 x 75	3 x 3	2.3	0.091	5.14	30.85	6.55	57.10	57.10	15.20	15.20	2.95	2.95	17.7	17.7
		3.0	0.118	6.60	39.61	8.41	71.60	71.60	19.10	19.10	2.92	2.92	22.5	22.5
		3.2	0.126	7.09	42.54	9.03	79.08	79.08	20.65	20.65	2.95	2.95	24.4	24.4
		4.0	0.157	8.60	51.57	10.95	90.20	90.20	24.00	24.00	2.87	2.87	28.8	28.8
		4.5	0.177	9.55	57.32	12.17	98.60	98.60	26.30	26.30	2.85	2.85	31.7	31.7
		5.0	0.197	10.49	62.93	13.36	106.00	106.00	28.40	28.40	2.82	2.82	34.5	34.5
		6.0	0.236	12.27	73.62	15.63	120.00	120.00	32.00	32.00	2.77	2.77	39.6	39.6
90 x 90	3½ x 3½	3.0	0.118	8.01	48.09	10.21	127.00	127.00	28.30	28.30	3.53	3.53	33.0	33.0
		3.2	0.126	8.36	50.14	10.65	128.62	128.62	28.84	28.84	3.48	3.48	33.9	33.9
		4.0	0.157	10.48	62.88	13.35	162.00	162.00	36.00	36.00	3.48	3.48	42.6	42.6
		4.5	0.177	11.67	70.04	14.87	178.00	178.00	39.50	39.50	3.46	3.46	47.1	47.1
		5.0	0.197	12.84	77.06	16.36	193.00	193.00	42.90	42.90	3.43	3.43	51.4	51.4
		6.0	0.236	15.10	90.57	19.23	220.00	220.00	49.00	49.00	3.39	3.39	59.5	59.5
100 x 100	4 x 4	3.0	0.118	8.96	53.74	11.41	177.00	177.00	35.40	35.40	3.94	3.94	41.2	41.2
		3.2	0.126	9.62	57.74	12.26	195.63	195.63	38.51	38.51	3.99	3.99	44.9	44.9
		4.0	0.157	11.74	70.41	14.95	226.00	226.00	45.30	45.30	3.89	3.89	53.3	53.3
		4.5	0.177	13.09	78.52	16.67	249.00	249.00	49.90	49.90	3.87	3.87	59.0	59.0
		5.0	0.197	14.41	86.48	18.36	271.00	271.00	54.20	54.20	3.84	3.84	64.6	64.6
		6.0	0.236	16.98	101.88	21.63	311.00	311.00	62.30	62.30	3.79	3.79	75.1	75.1
		9.0	0.354	23.55	141.30	30.00	391.00	391.00	78.10	78.10	3.61	3.61	98.6	98.6
125 x 125	5 x 5	4.5	0.177	16.62	99.71	21.17	506.00	506.00	80.90	80.90	4.89	4.89	94.8	94.8
		5.0	0.197	18.34	110.03	23.36	553.00	553.00	88.40	88.40	4.86	4.86	104.0	104.0
		6.0	0.236	21.69	130.14	27.63	641.00	641.00	103.00	103.00	4.82	4.82	122.0	122.0
		9.0	0.354	30.62	183.69	39.00	838.00	838.00	134.00	134.00	4.64	4.64	165.0	165.0
150 x 150	6 x 6	4.5	0.177	20.15	120.91	25.67	896.00	896.00	120.00	120.00	5.91	5.91	139.0	139.0
		5.0	0.197	22.26	133.58	28.36	982.00	982.00	131.00	131.00	5.89	5.89	153.0	153.0
		6.0	0.236	26.40	158.40	33.63	1146.00	1146.00	153.00	153.00	5.84	5.84	180.0	180.0
		9.0	0.354	37.68	226.08	48.00	1540.00	1540.00	205.00	205.00	5.66	5.66	248.0	248.0
175 x 175	7 x 7	4.5	0.177	23.70	142.21	30.19	1386.05	1386.05	158.30	158.30	6.78	6.78	191.7	191.7
		6.0	0.236	31.10	186.58	39.61	1798.12	1798.12	204.84	204.84	6.73	6.73	242.5	242.5
		9.0	0.354	45.28	271.66	57.68	2559.82	2559.82	293.33	293.33	6.65	6.65	350.7	350.7
200 x 200	8 x 8	4.5	0.177	27.22	163.30	34.67	2191.60	2191.60	219.20	219.20	7.95	7.95	252.9	252.9
		6.0	0.236	35.82	214.92	45.63	2832.90	2832.90	283.30	283.30	7.88	7.88	329.7	329.7
		9.0	0.354	52.34	314.06	66.68	3988.80	3988.80	398.90	398.90	7.73	7.73	472.4	472.4
250 x 250	10 x 10	6.0	0.236	45.24	271.44	57.63	5672.20	5672.20	453.80	453.80	9.92	9.92	524.5	524.5
		9.0	0.354	66.47	398.84	84.68	8093.60	8093.60	647.50	647.50	9.78	9.78	758.8	758.8

Rectangular Hollow Sections

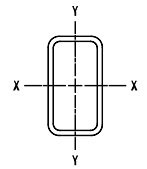
ASTM A-500 GRADES A & B / MANUFACTURER'S STANDARD



SIZE		WALL THICKNESS		CALCULATED WEIGHT		AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
NOMINAL	ACTUAL	mm	in	kg/m	kg/6m		I _x	I _y	Z _x	Z _y	i _x	i _y	S _x	S _y
mm	in	mm	in	kg/m	kg/6m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm	cm ³	cm ³
19 x 9	¾ x ⅜	1.0	0.039	0.39	2.36	0.50	0.22	0.07	0.23	0.15	0.66	0.38	0.30	0.18
		1.2	0.047	0.46	2.77	0.59	0.25	0.08	0.27	0.17	0.66	0.37	0.35	0.21
		1.6	0.063	0.59	3.51	0.75	0.32	0.10	0.33	0.20	0.65	0.36	0.44	0.26
25 x 12	1 x ½	1.0	0.039	0.56	3.34	0.71	0.57	0.19	0.45	0.30	0.90	0.52	0.57	0.35
		1.2	0.047	0.66	3.95	0.84	0.67	0.22	0.53	0.34	0.89	0.51	0.67	0.40
		1.6	0.063	0.86	5.17	1.10	0.84	0.27	0.66	0.42	0.87	0.49	0.85	0.51
32 x 16	1¼ x ⅝	1.0	0.039	0.71	4.25	0.90	1.18	0.39	0.74	0.49	1.14	0.66	0.66	0.46
		1.2	0.047	0.84	5.04	1.07	1.39	0.46	0.88	2.80	1.14	0.65	0.78	0.54
		1.6	0.063	1.10	6.59	1.40	1.78	0.57	1.12	3.59	1.13	0.64	1.01	0.70
38 x 19	1½ x ¾	1.0	0.039	0.86	5.17	1.10	2.08	0.70	1.09	0.73	1.38	0.80	0.76	0.58
		1.2	0.047	1.02	6.11	1.30	2.33	0.82	1.22	0.86	1.34	0.80	0.90	0.68
		1.6	0.063	1.33	8.01	1.70	3.06	1.01	1.61	1.06	1.34	0.77	2.08	1.26
38 x 25	1½ x 1	1.0	0.039	0.95	5.71	1.21	2.48	1.32	1.30	1.04	1.43	1.05	1.56	1.18
		1.2	0.047	1.13	6.81	1.45	2.93	1.56	1.54	1.23	1.42	1.04	1.85	1.40
		1.6	0.063	1.48	8.90	1.89	3.70	1.91	1.95	1.53	1.40	1.01	2.42	1.80
50 x 25	2 x 1	1.0	0.039	1.15	6.90	1.46	4.99	1.70	1.97	1.34	1.85	1.08	2.41	1.49
		1.2	0.047	1.37	8.23	1.75	5.91	2.00	2.33	1.58	1.84	1.07	2.87	1.77
		1.6	0.063	1.79	10.74	2.28	7.29	2.44	2.91	1.95	1.79	1.03	3.69	2.25
		2.3	0.091	2.50	15.02	3.19	9.86	3.23	3.94	2.59	1.76	1.01	5.11	3.09
		3.0	0.118	3.19	19.12	4.06	12.10	3.89	4.84	3.11	1.73	0.98	6.43	3.84
		3.2	0.126	3.41	20.48	4.35	13.28	4.25	5.23	3.34	1.75	0.99	6.77	4.06
65 x 38	2½ x 1½	1.6	0.063	2.49	14.93	3.17	18.30	7.94	5.63	4.18	2.40	1.58	6.91	4.75
		2.3	0.091	3.52	21.10	4.48	25.20	10.80	7.74	5.69	2.37	1.55	9.68	6.62
		3.0	0.118	4.32	24.92	5.29	29.80	12.80	9.18	6.75	2.31	1.51	12.30	8.36
		3.2	0.126	4.65	27.88	5.92	31.30	13.40	9.63	7.06	2.30	1.51	13.00	8.84
75 x 38	3 x 1½	1.6	0.063	2.71	16.25	3.45	25.30	8.85	6.76	4.66	2.71	1.60	8.59	5.34
		1.9	0.075	3.19	19.12	4.06	29.40	10.20	7.85	5.39	2.69	1.59	10.10	6.26
		2.3	0.091	3.81	22.84	4.85	34.60	12.00	9.23	6.30	2.67	1.57	12.10	7.44
		3.0	0.118	4.86	29.15	6.19	42.80	14.70	11.40	7.72	2.63	1.54	15.30	9.41
		3.2	0.126	5.15	30.90	6.56	45.00	15.40	12.00	8.09	2.62	1.53	16.30	9.95
75 x 50	3 x 2	1.9	0.075	3.54	21.24	4.51	35.50	19.10	9.48	7.62	2.81	2.05	11.80	8.88
		2.3	0.091	4.24	25.43	5.40	41.90	22.40	11.20	8.96	2.79	2.04	14.10	10.60
		3.0	0.118	5.42	32.55	6.91	52.20	27.80	13.90	11.10	2.75	2.00	17.90	13.50
		3.2	0.126	5.82	34.95	7.42	57.44	30.51	15.08	12.01	2.79	2.03	18.52	14.01
		4.0	0.157	7.03	42.15	8.95	65.00	34.30	17.30	13.70	2.69	1.96	23.20	17.30
		4.5	0.177	7.79	46.72	9.92	70.60	37.20	18.80	14.90	2.67	1.94	25.70	19.10
		6.0	0.236	9.91	59.49	12.63	84.40	44.10	22.50	17.60	2.58	1.87	32.60	24.10

Rectangular Hollow Sections

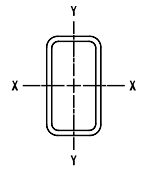
ASTM A-500 GRADES A & B / MANUFACTURER'S STANDARD



SIZE		WALL THICKNESS		CALCULATED WEIGHT		AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
NOMINAL	ACTUAL	mm	in	kg/m	kg/6m		I_x	I_y	Z_x	Z_y	i_x	i_y	S_x	S_y
mm	in	mm	in	kg/m	kg/6m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm	cm ³	cm ³
100 x 50	4 x 2	1.9	0.075	4.29	25.72	5.46	71.60	24.50	14.30	9.80	3.62	2.12	18.10	11.20
		2.3	0.091	5.14	30.85	6.55	84.80	29.00	17.00	11.60	3.60	2.10	21.70	13.30
		3.0	0.118	6.60	39.61	8.41	106.00	36.10	21.30	14.40	3.56	2.07	27.80	17.00
		3.2	0.126	7.09	42.54	9.03	117.38	39.71	23.11	15.63	3.61	2.10	29.01	17.86
		4.0	0.157	8.60	51.57	10.95	134.00	44.90	26.80	18.00	3.50	2.03	36.10	21.90
		4.5	0.177	9.55	57.32	12.17	147.00	48.90	29.30	19.50	3.47	2.00	40.10	24.30
		5.0	0.197	10.49	62.93	13.36	158.00	52.50	31.60	21.00	3.44	1.98	44.00	26.50
		6.0	0.236	12.27	73.62	15.63	179.00	58.70	35.70	23.50	3.38	1.94	51.40	30.70
100 x 75	4 x 3	3.0	0.118	7.78	46.68	9.91	142.00	91.10	28.40	24.30	3.78	3.03	35.10	28.70
		3.2	0.126	8.36	50.14	10.65	156.50	100.31	30.81	26.38	3.84	3.07	36.87	30.32
		4.0	0.157	10.17	60.99	12.95	180.00	115.00	36.00	30.80	3.73	2.99	45.70	37.40
		4.5	0.177	11.32	67.92	14.42	198.00	127.00	39.60	33.70	3.71	2.96	50.90	41.50
		5.0	0.197	12.45	74.70	15.86	215.00	137.00	42.90	36.50	3.68	2.94	55.90	45.60
		6.0	0.236	14.62	87.75	18.63	245.00	156.00	49.00	41.60	3.63	2.89	65.50	53.30
125 x 50	5 x 2	3.0	0.118	7.78	46.68	9.91	187.00	44.40	29.90	17.70	4.34	2.12	39.50	20.50
		3.2	0.126	8.36	50.14	10.65	206.45	48.70	32.45	19.17	4.39	2.14	41.46	21.63
		4.0	0.157	10.17	60.99	12.95	238.00	55.60	38.00	22.20	4.28	2.07	51.60	26.50
		4.5	0.177	11.32	67.92	14.42	261.00	60.60	41.70	24.20	4.25	2.05	57.40	29.40
		5.0	0.197	12.45	74.70	15.86	282.00	65.20	45.20	26.10	4.22	2.03	63.10	32.10
		6.0	0.236	14.62	87.75	18.63	322.00	73.30	51.50	29.30	4.16	1.98	74.00	37.30
125 x 75	5 x 3	3.0	0.118	8.96	53.74	11.41	243.00	111.00	38.90	29.50	4.61	3.12	48.70	34.10
		3.2	0.126	9.62	57.74	12.26	268.05	121.96	42.28	31.95	4.67	3.15	51.46	36.22
		4.0	0.157	11.74	70.41	14.95	311.00	141.00	49.70	37.50	4.56	3.07	63.70	44.50
		4.5	0.177	13.09	78.52	16.67	342.00	155.00	54.80	41.20	4.53	3.04	70.90	49.50
		5.0	0.197	14.41	86.48	18.36	373.00	168.00	59.60	44.70	4.50	3.02	78.10	54.30
		6.0	0.236	16.98	101.88	21.63	428.00	192.00	68.50	51.10	4.45	2.98	91.90	63.70
		9.0	0.354	24.52	147.09	31.23	626.00	269.00	98.50	70.60	4.47	2.94	126.30	86.50
150 x 50	6 x 2	3.0	0.118	8.96	53.74	11.41	299.00	52.60	39.80	21.10	5.12	2.15	53.20	24.10
		3.2	0.126	9.62	57.74	12.26	329.66	57.86	43.26	22.78	5.18	2.18	56.04	25.56
		4.0	0.157	11.74	70.41	14.95	381.00	66.20	50.90	26.50	5.05	2.10	69.50	31.10
		4.5	0.177	13.09	78.52	16.67	420.00	72.20	56.00	28.90	5.02	2.08	77.50	34.50
		5.0	0.197	14.41	86.48	18.36	456.00	77.90	60.80	31.10	4.99	2.06	85.30	37.80
		6.0	0.236	16.98	101.88	21.63	523.00	87.90	69.80	35.20	4.92	2.02	100.00	43.90
150 x 75	6 x 3	3.2	0.126	10.79	64.72	13.74	420.39	143.18	54.90	37.69	5.51	3.23	65.38	40.48
		4.0	0.157	13.31	79.83	16.95	488.00	166.00	65.10	44.20	5.37	3.13	84.10	51.60
		4.5	0.177	14.85	89.11	18.92	539.00	183.00	71.90	48.70	5.34	3.11	93.80	57.40
		5.0	0.197	16.38	98.25	20.86	588.00	198.00	78.40	52.90	5.31	3.08	103.00	63.10
		6.0	0.236	19.33	116.01	24.63	679.00	228.00	90.50	60.70	5.25	3.04	122.00	74.00
		9.0	0.354	27.61	165.65	35.17	905.00	297.00	121.00	79.20	5.07	2.91	172.00	105.00

Rectangular Hollow Sections

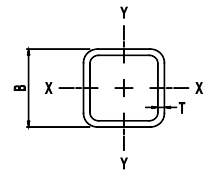
ASTM A-500 GRADES A & B / MANUFACTURER'S STANDARD



SIZE		WALL THICKNESS		CALCULATED WEIGHT		AREA	MOMENT OF INERTIA		SECTION MODULUS		RADIUS OF GYRATION		PLASTIC MODULUS	
NOMINAL	ACTUAL	mm	in	kg/m	kg/6m		I_x	I_y	Z_x	Z_y	i_x	i_y	S_x	S_y
mm	in	mm	in	kg/m	kg/6m	cm ²	cm ⁴	cm ⁴	cm ³	cm ³	cm	cm	cm ³	cm ³
150 x 100	6 x 4	4.0	0.157	14.88	89.25	18.95	595.00	319.00	79.30	63.70	5.60	4.10	98.70	74.50
		4.5	0.177	16.62	99.71	21.17	658.00	352.00	87.70	70.40	5.58	4.08	110.00	83.10
		5.0	0.197	18.34	110.03	23.36	719.00	384.00	95.90	76.80	5.55	4.05	122.00	91.50
		6.0	0.236	21.69	130.14	27.63	835.00	444.00	111.10	88.80	5.50	4.01	144.00	108.00
		9.0	0.354	31.14	186.85	39.67	1129.00	595.00	150.50	119.00	5.33	3.87	190.00	143.00
175 x 100	7 x 4	4.5	0.177	18.43	110.61	23.48	1015.60	424.14	114.38	83.57	6.58	4.24	134.87	91.28
		6.0	0.236	24.26	145.55	30.90	1298.64	536.94	146.01	105.53	6.45	4.17	177.31	119.30
		9.0	0.354	34.69	208.15	44.19	1694.06	686.78	193.37	137.65	6.20	3.94	244.82	163.22
175 x 125	7 x 5	4.5	0.177	20.46	122.76	26.06	1194.58	707.59	134.37	111.76	6.73	5.21	159.94	126.84
		6.0	0.236	26.74	160.44	34.06	1502.60	899.06	170.43	141.26	6.68	5.13	196.64	155.51
		9.0	0.354	38.19	229.12	48.65	1985.42	1157.12	226.14	185.17	6.38	4.88	280.05	220.24
200 x 100	8 x 4	4.5	0.177	20.15	120.91	25.67	1331.00	455.00	133.00	90.90	7.20	4.21	170.00	105.00
		5.0	0.197	22.26	133.58	28.36	1459.00	497.00	146.00	99.40	7.17	4.19	188.00	115.00
		6.0	0.236	26.40	158.40	33.63	1703.00	577.00	170.00	115.00	7.12	4.14	222.00	136.00
		9.0	0.354	37.68	226.08	48.00	2280.00	764.00	228.00	153.00	6.89	3.99	293.00	180.00
200 x 150	8 x 6	4.5	0.177	23.68	142.10	30.17	1761.60	1134.60	176.20	151.30	7.64	6.13	208.90	171.80
		6.0	0.236	31.11	186.66	39.63	2268.10	1457.20	226.80	194.30	7.56	6.06	271.50	223.10
		9.0	0.354	45.28	271.66	57.68	3167.30	2024.90	316.70	270.00	7.41	5.93	386.40	316.90
200 x 150	8 x 6	4.5	0.177	23.68	142.10	30.17	1761.60	1134.60	176.20	151.30	7.64	6.13	208.90	171.80
		6.0	0.236	31.11	186.66	39.63	2268.10	1457.20	226.80	194.30	7.56	6.06	271.50	223.10
		9.0	0.354	45.28	271.66	57.68	3167.30	2024.90	316.70	270.00	7.41	5.93	386.40	316.90
250 x 150	10 x 6	6.0	0.236	35.82	214.92	45.63	1768.40	3885.70	310.90	235.80	9.23	6.23	378.10	266.30
		9.0	0.354	52.34	314.06	66.68	2472.80	5478.70	438.30	329.70	9.06	6.09	541.90	380.40
300 x 200	12 x 8	6.0	0.236	45.24	271.44	57.63	7370.50	3962.30	491.40	396.20	11.31	8.29	587.80	446.10
		9.0	0.354	66.47	398.84	84.68	10529.50	5631.61	702.00	563.20	11.15	8.16	850.80	644.30

Cold Formed Square Hollow Sections

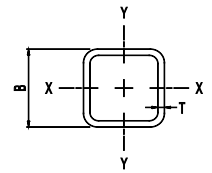
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Mass per unit length	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Section Modulus	Plastic Section Modulus	Torsional Inertia Constant	Torsional Modulus Constant	Superficial area per meter length	Nominal length per tonne	Ratio for Local Buckling Flange B/T
Size	Thickness											
B X B	T	M	A	I	i	W _{el}	W _{pl}	L _t	C _t	A _s	m	B/T
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
20 x 20	1.00	0.58	0.73	0.43	0.77	0.43	0.52	0.70	0.65	0.077	1735.0	15.0
	1.20	0.68	0.87	0.50	0.76	0.50	0.60	0.82	0.75	0.076	1472.2	11.7
	1.50	0.83	1.05	0.58	0.74	0.58	0.72	0.98	0.88	0.075	1210.9	8.3
25 x 25	1.00	0.73	0.93	0.88	0.97	0.71	0.83	1.41	1.06	0.097	1363.5	20.0
	1.20	0.87	1.11	1.03	0.96	0.82	0.97	1.66	1.24	0.096	1152.5	15.8
	1.50	1.06	1.35	1.22	0.95	0.97	1.17	2.01	1.47	0.095	942.2	11.7
	2.00	1.36	1.74	1.48	0.92	1.19	1.47	2.53	1.80	0.093	733.4	7.5
	2.30	1.53	1.95	1.61	0.91	1.29	1.62	2.80	1.97	0.092	652.5	5.9
	2.50	1.64	2.09	1.69	0.90	1.35	1.71	2.97	2.07	0.091	609.8	5.0
	3.00	1.89	2.41	1.84	0.87	1.47	1.91	3.33	2.27	0.090	529.0	3.3
32 x 32	1.20	1.13	1.44	2.25	1.25	1.41	1.65	3.58	2.11	0.124	883.8	21.7
	1.50	1.39	1.77	2.70	1.23	1.69	2.00	4.37	2.54	0.123	718.9	16.3
	2.00	1.80	2.30	3.36	1.21	2.10	2.54	5.58	3.18	0.121	554.6	11.0
	2.30	2.04	2.60	3.71	1.20	2.32	2.84	6.24	3.52	0.120	490.7	8.9
	2.50	2.19	2.79	3.92	1.19	2.45	3.02	6.66	3.72	0.119	456.7	7.8
38 x 38	3.00	2.55	3.25	4.38	1.16	2.74	3.44	7.62	4.18	0.118	392.2	5.7
	1.20	1.36	1.73	3.86	1.49	2.03	2.37	6.09	3.05	0.148	736.6	26.7
	1.50	1.67	2.13	4.67	1.77	2.81	2.89	7.46	3.70	0.147	597.5	20.3
	2.00	2.18	2.78	5.88	1.75	3.35	3.70	9.60	4.67	0.145	458.7	14.0
	2.30	2.47	3.15	6.54	1.73	3.72	4.15	10.80	5.20	0.144	404.6	11.5
40 x 40	2.50	2.66	3.39	6.94	1.72	3.95	4.44	11.56	5.53	0.143	375.9	10.2
	3.00	3.12	3.97	7.85	1.69	4.47	5.10	13.35	6.28	0.142	321.0	7.7
	1.50	1.77	2.25	5.49	1.56	2.75	3.22	8.75	4.13	0.155	565.7	21.7
	2.00	2.31	2.94	6.94	1.54	3.47	4.13	11.28	5.23	0.153	432.9	15.0
	2.50	2.82	3.59	8.22	1.51	4.11	4.97	13.61	6.21	0.151	354.6	11.0
50 x 50	3.00	3.30	4.21	9.32	1.49	4.66	5.72	15.75	7.07	0.150	303.0	8.3
	1.50	2.24	2.85	11.07	1.97	4.43	5.15	17.42	6.65	0.195	446.7	28.3
	2.00	2.93	3.74	14.15	1.95	5.66	6.66	22.63	8.51	0.193	340.9	20.0
	2.30	3.34	4.25	15.86	1.93	6.34	7.52	25.61	9.55	0.192	299.6	16.7
	2.50	3.60	4.59	16.94	1.92	6.78	8.07	27.53	10.22	0.191	277.6	15.0
	3.00	4.25	5.41	19.47	1.90	7.79	9.39	32.13	11.76	0.190	235.5	11.7
	4.00	5.45	6.95	26.15	1.94	10.46	12.73	44.09	15.56	0.186	183.3	7.5
60 x 60	4.50	6.02	7.67	25.50	1.82	10.20	12.76	44.09	15.56	0.185	166.1	6.1
	1.50	2.71	3.45	19.52	2.38	6.51	7.53	30.48	9.77	0.235	369.0	35.0
	2.00	3.56	4.54	25.14	2.35	8.38	9.79	39.79	12.59	0.233	280.8	25.0
	2.30	4.06	5.17	28.31	2.34	9.44	11.09	45.16	14.19	0.232	246.3	21.1
	2.50	4.39	5.59	30.34	2.33	10.11	11.93	48.66	15.22	0.231	227.9	19.0
	3.00	5.19	6.61	35.13	2.31	11.71	13.95	57.09	17.65	0.230	192.8	15.0
	4.00	6.71	8.55	47.07	2.35	15.69	18.85	80.00	24.00	0.226	149.0	10.0
65 x 65	4.50	7.43	9.47	47.20	2.23	15.73	19.32	79.76	23.87	0.225	134.5	8.3
	2.00	3.88	4.94	32.31	2.56	9.94	11.58	50.92	14.93	0.253	258.0	27.5
	2.30	4.42	5.63	36.45	2.54	11.21	13.13	57.86	16.86	0.252	226.2	23.3
	2.50	4.78	6.09	39.10	2.53	12.03	14.14	62.39	18.10	0.251	209.2	21.0
	3.00	5.66	7.21	45.42	2.51	13.97	16.57	73.35	21.05	0.250	176.7	16.7
	4.00	7.34	9.35	56.64	2.46	17.43	21.05	93.72	26.34	0.246	136.3	11.3
	4.50	8.14	10.37	61.59	2.44	18.95	23.10	103.14	28.70	0.245	122.9	9.4
75 x 75	5.00	8.91	11.36	66.10	2.41	20.34	25.03	112.03	30.88	0.243	112.2	8.0
	6.00	10.39	13.23	73.91	2.36	22.74	28.53	128.23	34.72	0.239	96.3	5.8
	2.30	5.14	6.55	57.10	2.95	15.23	17.74	89.98	22.88	0.292	194.4	27.6
	2.50	5.56	7.09	61.38	2.94	16.37	19.12	97.13	24.60	0.291	179.7	25.0
	3.00	6.60	8.41	71.62	2.92	19.10	22.49	114.54	28.73	0.290	151.5	20.0
	4.00	8.59	10.95	90.19	2.87	24.05	28.76	147.32	36.28	0.286	116.4	13.8
	4.50	9.55	12.17	98.55	2.85	26.28	31.68	162.68	39.71	0.285	104.7	11.7
75 x 75	5.00	10.48	13.36	106.33	2.82	28.35	34.46	177.35	42.92	0.283	95.4	10.0
	6.00	12.27	15.63	120.16	2.77	32.04	39.58	204.62	48.70	0.279	81.5	7.5

Cold Formed Square Hollow Sections

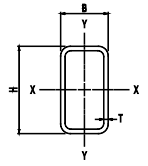
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Mass per unit length	Cross Sectional Area	Second Moment of Area	Radius of Gyration	Elastic Section Modulus	Plastic Section Modulus	Torsional Inertia Constant	Torsional Modulus Constant	Superficial area per meter length	Nominal length per tonne	Ratio for Local Buckling Flange
Size	Thickness											
B X B	T	M	A	I	i	W_{el}	W_{pl}	L_t	C_t	A_s		B/T
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
89 x 89	3.00	7.92	10.09	122.89	3.49	27.62	32.28	194.59	41.50	0.346	126.3	24.7
	4.00	10.35	13.19	156.25	3.44	35.11	41.58	251.87	52.87	0.342	96.6	17.3
	4.50	11.53	14.69	171.59	3.42	38.56	45.97	279.07	58.13	0.341	86.7	14.8
	5.00	12.68	16.16	186.07	3.39	41.81	50.18	305.30	63.11	0.339	78.8	12.8
	6.00	14.91	18.99	212.50	3.34	47.75	58.09	354.87	72.30	0.335	67.1	9.8
90 x 90	2.30	6.23	7.93	100.79	3.56	22.40	25.93	157.53	33.63	0.352	160.6	34.1
	2.50	6.74	8.59	108.55	3.56	24.12	28.00	170.26	36.23	0.351	148.3	31.0
	3.00	8.01	10.21	127.28	3.53	28.29	33.04	201.42	42.51	0.350	124.8	25.0
	4.00	10.48	13.35	161.92	3.48	35.98	42.58	260.80	54.17	0.346	95.4	17.5
	4.50	11.67	14.87	177.87	3.46	39.53	47.09	289.02	59.58	0.345	85.7	15.0
	5.00	12.84	16.36	192.93	3.43	42.87	51.41	316.26	64.70	0.343	77.9	13.0
100 x 100	6.00	15.10	19.23	220.48	3.39	48.99	59.54	367.76	74.16	0.339	66.2	10.0
	2.30	6.95	8.85	139.73	3.97	27.95	32.26	217.48	41.95	0.392	143.9	38.5
	3.00	8.96	11.41	177.05	3.94	35.41	41.21	278.68	53.19	0.390	111.7	28.3
	4.00	11.73	14.95	226.35	3.89	45.27	53.30	362.01	68.10	0.386	85.2	20.0
	4.50	13.08	16.67	249.29	3.87	49.86	59.04	401.87	75.07	0.385	76.4	17.2
	5.00	14.41	18.36	271.10	3.84	54.22	64.59	440.52	81.72	0.383	69.4	15.0
	6.00	16.98	21.63	311.47	3.79	62.29	75.10	514.16	94.12	0.379	58.9	11.7
	6.30	17.47	22.25	314.20	3.76	62.84	76.40	536.00	97.00	0.373	57.2	10.9
	8.00	21.39	27.24	365.90	3.67	73.18	91.10	644.60	114.20	0.366	46.8	7.5
	9.00	23.53	29.98	390.60	3.61	78.12	98.60	700.40	122.80	0.361	42.5	6.1
125 x 125	3.00	11.31	14.41	354.50	4.96	56.72	65.56	552.66	85.14	0.490	88.4	36.7
	4.00	14.87	18.95	457.23	4.91	73.16	85.33	721.99	109.92	0.486	67.2	26.3
	4.50	16.62	21.17	505.83	4.89	80.93	94.84	803.85	121.67	0.485	60.2	22.8
	5.00	18.33	23.36	552.62	4.86	88.42	104.10	883.82	133.01	0.483	54.5	20.0
	6.00	21.69	27.63	640.89	4.82	102.54	121.87	1038.10	154.49	0.479	46.1	15.8
	6.30	22.41	28.55	652.60	4.78	104.42	124.90	1086.50	160.10	0.473	44.6	14.8
	8.00	27.67	35.24	775.30	4.69	124.05	151.00	1325.40	191.70	0.466	36.1	10.6
	9.00	30.60	38.98	837.80	4.64	134.05	164.90	1454.10	208.20	0.461	32.7	8.9
150 x 150	4.00	18.01	22.95	807.82	5.93	107.71	124.87	1264.76	161.73	0.586	55.5	32.5
	4.50	20.15	25.67	896.30	5.91	119.51	139.08	1410.79	179.51	0.585	49.6	28.3
	5.00	22.26	28.36	982.12	5.89	130.95	152.98	1554.13	196.79	0.583	44.9	25.0
	6.00	26.40	33.63	1145.91	5.84	152.79	179.88	1832.69	229.84	0.579	37.9	20.0
	6.30	27.36	34.85	1173.70	5.80	156.49	185.10	1921.60	238.80	0.573	36.5	18.8
	8.00	33.95	43.24	1411.80	5.71	188.24	226.00	2364.20	289.00	0.566	29.5	13.8
	9.00	37.66	47.98	1537.40	5.66	204.99	248.20	2608.10	316.00	0.561	26.6	11.7
175 x 175	10.00	41.26	52.57	1650.00	5.61	220.00	269.00	2837.67	341.00	0.557	24.2	10.0
	4.50	23.68	30.17	1448.83	6.93	165.58	191.75	2264.90	248.60	0.685	42.2	33.9
	5.00	26.18	33.36	1590.86	6.91	181.81	211.24	2498.33	273.05	0.683	38.2	30.0
	6.00	31.11	39.63	1864.03	6.86	213.03	249.15	2954.17	320.18	0.679	32.1	24.2
	6.30	32.57	41.49	1943.18	6.84	222.08	260.25	3088.05	333.86	0.678	30.7	22.8
	8.00	40.66	51.79	2367.89	6.76	270.62	320.75	3821.58	407.53	0.673	24.6	16.9
	9.00	44.73	56.98	2599.21	6.75	297.05	354.47	4233.04	447.88	0.669	22.4	14.4
200 x 200	10.00	49.11	62.57	2817.20	6.71	321.97	386.83	4629.57	486.09	0.666	20.4	12.5
	4.50	27.21	34.67	2191.54	7.95	219.15	252.86	3408.36	328.93	0.785	36.7	39.4
	5.00	30.11	38.36	2410.09	7.93	241.01	278.87	3763.30	361.82	0.783	33.2	35.0
	6.00	35.82	45.63	2832.75	7.88	283.28	329.67	4458.81	425.51	0.779	27.9	28.3
	6.30	37.25	47.45	2921.50	7.85	292.15	341.20	4682.20	443.50	0.773	26.8	26.7
	8.00	46.51	59.24	3566.30	7.76	356.63	420.90	5815.30	543.60	0.766	21.5	20.0
	9.00	51.79	65.98	3918.50	7.71	391.85	465.30	6454.10	598.90	0.761	19.3	17.2
	10.00	56.96	72.57	4251.00	7.65	425.11	508.10	7071.90	651.50	0.757	17.6	15.0
250 x 250	5.00	37.96	48.36	4805.00	9.97	384.40	442.30	7443.00	576.80	0.983	26.3	45.0
	6.00	45.24	57.63	5672.00	9.92	453.76	524.40	8842.50	681.20	0.979	22.1	36.7
	6.30	47.41	60.39	5872.60	9.86	469.81	544.40	9290.40	711.20	0.978	21.1	34.7
	8.00	59.50	75.79	7229.20	9.77	578.34	675.80	11597.90	878.20	0.973	16.8	26.3
	9.00	65.92	84.67	7983.80	9.71	638.70	750.00	12913.50	971.70	0.969	15.0	22.8
	10.00	72.66	92.57	8706.70	9.70	696.54	822.00	14197.50	1061.80	0.957	13.8	20.0

Cold Formed Rectangular Hollow Sections

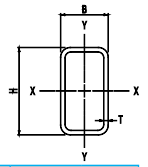
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Mass per unit length	Cross Sectional Area	Second Moment of Area		Radius of Gyration		Elastic Section Modulus		Plastic Section Modulus		Torsional Inertia Constant	Torsional Modulus Constant	Superficial area per meter length	Nominal length per tonne	Ratio for Local Buckling	
Size	Thickness			I_{xx}	I_{yy}	i_{xx}	i_{yy}	W_{elxx}	W_{elyy}	W_{plxx}	W_{plyy}					L_t	C_t
H x B	T	M	A	cm^4	cm^4	cm	cm	cm^3	cm^3	cm^3	cm^3	cm^4	cm^3	m^2/m	m	B/T	H/T
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	B/T	H/T
38 x 19	1.00	0.84	1.07	1.99	0.68	1.36	0.79	1.05	0.71	1.30	0.80	1.65	1.23	0.111	1185.8	14.0	33.0
	1.20	1.00	1.27	2.32	0.78	1.35	0.78	1.22	0.82	1.53	0.94	1.93	1.43	0.110	1000.4	10.8	26.7
	1.50	1.23	1.56	2.77	0.93	1.33	0.77	1.46	0.98	1.85	1.14	2.33	1.70	0.109	815.5	7.7	20.3
38 x 25	1.00	0.94	1.19	2.40	1.26	1.42	1.03	1.26	1.01	1.52	1.14	2.63	1.66	0.123	1066.7	20.0	33.0
	1.20	1.11	1.42	2.80	1.47	1.41	1.02	1.48	1.17	1.79	1.35	3.10	1.94	0.122	898.8	15.8	26.7
	1.50	1.37	1.74	3.37	1.76	1.39	1.00	1.77	1.40	2.18	1.63	3.78	2.33	0.121	731.3	11.7	20.3
40 x 20	1.00	0.89	1.13	2.33	0.80	1.43	0.84	1.17	0.80	1.45	0.90	1.93	1.38	0.117	1123.1	15.0	35.0
	1.20	1.06	1.35	2.73	0.92	1.42	0.83	1.36	0.92	1.71	1.05	2.27	1.60	0.116	946.9	11.7	28.3
	1.50	1.30	1.65	3.27	1.10	1.41	0.81	1.63	1.10	2.07	1.27	2.74	1.91	0.115	771.1	8.3	21.7
	2.00	1.68	2.14	4.05	1.34	1.38	0.79	2.02	1.34	2.61	1.60	3.45	2.36	0.113	596.1	5.0	15.0
	2.30	1.89	2.41	4.45	1.47	1.36	0.78	2.23	1.47	2.91	1.77	3.83	2.58	0.112	528.1	3.7	12.4
	2.50	2.03	2.59	4.69	1.54	1.35	0.77	2.35	1.54	3.09	1.88	4.06	2.72	0.111	492.0	3.0	11.0
	3.00	2.36	3.01	5.21	1.68	1.32	0.75	2.60	1.68	3.50	2.12	4.57	3.00	0.110	423.5	1.7	8.3
50 x 25	1.00	1.13	1.43	4.69	1.60	1.81	1.06	1.87	1.28	2.31	1.43	3.85	2.22	0.147	888.2	20.0	45.0
	1.20	1.34	1.71	5.50	1.88	1.80	1.05	2.20	1.50	2.73	1.69	4.54	2.59	0.146	747.0	15.8	36.7
	1.50	1.65	2.10	6.65	2.25	1.77	1.03	2.81	1.90	3.33	2.05	5.54	3.13	0.145	606.0	11.7	28.3
	2.00	2.15	2.74	8.38	2.81	1.75	1.01	3.35	2.25	4.26	2.62	7.06	3.92	0.143	465.4	7.5	20.0
	2.30	2.44	3.10	9.31	3.10	1.73	1.00	3.72	2.48	4.78	2.92	7.90	4.34	0.142	410.6	5.9	16.7
	2.50	2.62	3.34	9.89	3.28	1.72	0.99	3.95	2.62	5.11	3.12	8.43	4.60	0.141	381.5	5.0	15.0
	3.00	3.07	3.91	11.2	3.67	1.69	0.97	4.47	2.93	5.86	3.56	9.64	5.18	0.140	325.9	3.3	11.7
50 x 30	1.00	1.20	1.53	5.29	2.41	1.86	1.25	2.11	1.61	2.56	1.80	5.26	2.70	0.157	830.3	25.0	45.0
	1.20	1.43	1.83	6.22	2.83	1.85	1.25	2.49	1.89	3.02	2.13	6.22	3.17	0.156	697.9	20.0	36.7
	2.00	2.31	2.94	9.54	4.29	1.80	1.21	3.81	2.86	4.74	3.33	9.77	4.84	0.153	433.7	10.0	20.0
	2.50	2.82	3.59	11.3	5.05	1.77	1.19	4.52	3.37	5.70	3.98	11.74	5.72	0.151	354.9	7.0	15.0
	3.00	3.30	4.21	12.8	5.70	1.75	1.16	5.13	3.80	6.57	4.58	13.53	6.49	0.150	302.7	5.0	11.7
60 x 40	2.00	2.93	3.74	18.4	9.83	2.22	1.62	6.14	4.92	7.47	5.65	20.70	8.12	0.193	340.9	15.0	25.0
	2.50	3.60	4.59	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	25.14	9.72	0.191	277.6	11.0	19.0
	3.00	4.25	5.41	25.4	13.4	2.17	1.58	8.46	6.72	10.5	7.94	29.28	11.17	0.190	235.5	8.3	15.0
	4.00	5.45	6.95	31.0	16.3	2.11	1.53	10.3	8.14	13.2	9.89	36.67	13.65	0.186	183.3	5.0	10.0
	5.00	6.56	8.36	35.3	18.4	2.06	1.48	11.8	9.21	15.4	11.52	42.85	15.60	0.183	152.4	3.0	7.0
65 x 38	1.50	2.31	2.94	16.9	7.37	2.39	1.58	5.18	3.88	6.32	4.37	16.39	6.53	0.201	433.0	20.3	38.3
	1.90	2.89	3.68	20.7	9.00	2.37	1.56	6.36	4.74	7.82	5.40	20.30	8.00	0.199	346.5	15.0	29.2
	2.00	3.03	3.86	21.6	9.39	2.37	1.56	6.64	4.94	8.18	5.64	21.24	8.35	0.199	330.3	14.0	27.5
	2.30	3.45	4.39	24.2	10.5	2.35	1.55	7.46	5.53	9.24	6.37	24.01	9.36	0.198	290.2	11.5	23.3
	2.50	3.72	4.74	25.9	11.2	2.34	1.54	7.97	5.90	9.92	6.83	25.79	10.00	0.197	268.8	10.2	21.0
	3.00	4.39	5.59	29.8	12.8	2.31	1.51	9.18	6.75	11.5	7.93	30.02	11.50	0.196	228.0	7.7	16.7
	4.00	5.64	7.19	36.5	15.5	2.25	1.47	11.2	8.17	14.5	9.89	37.55	14.04	0.192	177.2	4.5	11.3
75 x 25	1.50	2.24	2.85	18.7	3.29	2.56	1.07	4.98	2.63	6.43	2.94	9.39	4.78	0.195	446.7	11.7	45.0
	1.90	2.80	3.56	22.8	3.98	2.53	1.06	6.09	3.18	7.94	3.61	11.50	5.80	0.193	357.6	8.2	34.5
	2.00	2.93	3.74	23.8	4.14	2.53	1.05	6.36	3.31	8.31	3.77	12.01	6.04	0.193	340.9	7.5	32.5
	2.30	3.34	4.25	26.7	4.59	2.51	1.04	7.12	3.67	9.37	4.23	13.46	6.72	0.192	299.6	5.9	27.6
	2.50	3.60	4.59	28.5	4.87	2.49	1.03	7.60	3.89	10.1	4.53	14.38	7.14	0.191	277.6	5.0	25.0
	3.00	4.25	5.41	32.7	5.49	2.46	1.01	8.72	4.39	11.7	5.21	16.50	8.10	0.190	235.5	3.3	20.0
	4.00	5.45	6.95	39.7	6.46	2.39	0.96	10.6	5.17	14.6	6.39	20.01	9.61	0.186	183.3	1.3	13.8
	4.50	6.02	7.67	42.6	6.81	2.36	0.94	11.3	5.45	15.8	6.89	21.40	10.19	0.185	166.1	0.6	11.7
75 x 38	1.50	2.55	3.24	23.9	8.37	2.72	1.61	6.38	4.40	7.86	4.92	19.94	7.59	0.221	392.9	20.3	45.0
	1.90	3.18	4.06	29.4	10.2	2.69	1.59	7.85	5.39	9.75	6.08	24.71	9.30	0.219	314.0	15.0	34.5
	2.00	3.34	4.26	30.8	10.7	2.69	1.58	8.20	5.62	10.2	6.36	25.86	9.71	0.219	299.2	14.0	32.5
	2.30	3.81	4.85	34.6	12.0	2.67	1.57	9.23	6.30	11.5	7.19	29.24	10.90	0.218	262.6	11.5	27.6
	2.50	4.11	5.24	37.1	12.8	2.66	1.56	9.88	6.73	12.4	7.72	31.42	11.66	0.217	243.2	10.2	25.0
	3.00	4.86	6.19	42.8	14.7	2.63	1.54	11.4	7.72	14.5	8.98	36.62	13.43	0.216	205.9	7.7	20.0
	4.00	6.27	7.99	52.8	17.9	2.57	1.50	14.1	9.40	18.3	11.2	45.93	16.48	0.212	159.5	4.5	13.8
	4.50	6.94	8.84	57.1	19.2	2.54	1.47	15.2	10.1	19.9	12.3	50.04	17.77	0.211	144.1	3.4	11.7

Cold Formed Rectangular Hollow Sections

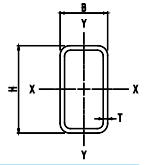
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Mass per unit length	Cross Sectional Area	Second Moment of Area		Radius of Gyration		Elastic Section Modulus		Plastic Section Modulus		Torsional Inertia Constant	Torsional Modulus Constant	Superficial area per meter length	Nominal length per tonne	Ratio for Local Buckling	
Size	Thickness			I_{xx}	I_{yy}	i_{xx}	i_{yy}	W_{elxx}	W_{elyy}	W_{plxx}	W_{plyy}					Flange	Web
H x B	T	M	A	I_{xx}	I_{yy}	i_{xx}	i_{yy}	W_{elxx}	W_{elyy}	W_{plxx}	W_{plyy}	L_t	C_t	A_s	m	B/T	H/T
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m			
75 x 50	1.50	2.83	3.60	28.8	15.5	2.83	2.07	7.68	6.19	9.18	6.97	31.70	10.18	0.245	353.7	28.3	45.0
	1.90	3.54	4.51	36.8	19.6	2.86	2.08	9.82	7.85	11.8	8.88	0.00	0.00	0.243	282.3	21.3	34.5
	2.00	3.72	4.74	37.2	19.9	2.80	2.05	9.91	7.96	12.0	9.06	41.35	13.12	0.243	268.9	20.0	32.5
	2.30	4.24	5.40	41.9	22.4	2.79	2.04	11.2	8.96	13.6	10.3	46.92	14.78	0.242	235.8	16.7	27.6
	2.50	4.58	5.84	45.0	24.0	2.77	2.03	12.0	9.60	14.6	11.0	50.54	15.85	0.241	218.2	15.0	25.0
	3.00	5.42	6.91	52.2	27.8	2.75	2.00	13.9	11.1	17.1	12.9	59.27	18.38	0.240	184.4	11.7	20.0
	4.00	7.02	8.95	65.0	34.3	2.69	1.96	17.3	13.7	21.7	16.3	75.33	22.88	0.236	142.4	7.5	13.8
	4.50	7.79	9.92	70.6	37.2	2.67	1.94	18.8	14.9	23.8	17.9	82.66	24.86	0.235	128.4	6.1	11.7
	5.00	8.52	10.86	75.6	39.7	2.64	1.91	20.2	15.9	25.7	19.3	89.52	26.67	0.233	117.3	5.0	10.0
100 x 50	1.90	4.29	5.46	71.6	24.5	3.62	2.12	14.3	9.8	17.6	10.9	58.70	16.90	0.293	233.2	21.3	47.6
	2.00	4.50	5.74	75.0	25.7	3.62	2.12	15.0	10.3	18.5	11.5	61.60	17.70	0.293	222.0	20.0	45.0
	2.30	5.14	6.55	84.8	29.0	3.60	2.10	17.0	11.6	21.0	13.0	69.90	20.00	0.292	194.4	16.7	38.5
	2.50	5.56	7.09	91.2	31.1	3.59	2.09	18.2	12.4	22.7	14.0	75.40	21.50	0.291	179.7	15.0	35.0
	3.00	6.60	8.41	106.5	36.1	3.56	2.07	21.3	14.4	26.7	16.4	88.60	25.00	0.290	151.5	11.7	28.3
	4.00	8.59	10.95	134.1	44.9	3.50	2.03	26.8	18.0	34.1	20.9	113.00	31.30	0.286	116.4	7.5	20.0
	4.50	9.55	12.17	146.6	48.9	3.47	2.00	29.3	19.5	37.6	23.0	124.30	34.20	0.285	104.7	6.1	17.2
	5.00	10.48	13.36	158.2	52.5	3.44	1.98	31.6	21.0	40.8	25.0	134.90	36.80	0.283	95.4	5.0	15.0
	6.00	12.27	15.63	178.8	58.7	3.38	1.94	35.8	23.5	46.9	28.5	154.20	41.40	0.279	81.5	3.3	11.7
6.30	12.52	15.95	175.7	58.2	3.32	1.91	35.1	23.3	46.9	28.6	158.10	42.10	0.273	79.9	2.9	10.9	
100 x 75	3.00	7.78	9.91	141.8	91.1	3.78	3.03	28.4	24.3	33.9	27.9	176.60	39.10	0.340	128.6	20.0	28.3
	3.20	8.26	10.53	149.8	96.2	3.77	3.02	30.0	25.6	35.9	29.5	187.30	41.30	0.339	121.0	18.4	26.3
	4.00	10.16	12.95	180.2	115.4	3.73	2.99	36.0	30.8	43.7	35.9	228.20	49.70	0.336	98.4	13.8	20.0
	4.50	11.32	14.42	197.9	126.5	3.71	2.96	39.6	33.7	48.3	39.6	252.70	54.60	0.335	88.4	11.7	17.2
	5.00	12.45	15.86	214.6	137.0	3.68	2.94	42.9	36.5	52.7	43.2	276.20	59.20	0.333	80.3	10.0	15.0
	6.00	14.63	18.63	245.1	156.0	3.63	2.89	49.0	41.6	61.0	49.9	320.40	67.70	0.329	68.4	7.5	11.7
125 x 50	2.50	6.55	8.34	159.6	38.1	4.37	2.14	25.5	15.2	32.3	17.0	101.30	27.10	0.341	152.8	15.0	45.0
	3.00	7.78	9.91	187.0	44.4	4.34	2.12	29.9	17.7	38.1	20.0	119.00	31.60	0.340	128.6	11.7	36.7
	4.00	10.16	12.95	237.5	55.6	4.28	2.07	38.0	22.2	49.0	25.5	152.10	39.80	0.336	98.4	7.5	26.3
	4.50	11.32	14.42	260.7	60.6	4.25	2.05	41.7	24.2	54.2	28.1	167.40	43.50	0.335	88.4	6.1	22.8
	5.00	12.45	15.86	282.5	65.2	4.22	2.03	45.2	26.1	59.1	30.6	182.00	47.00	0.333	80.3	5.0	20.0
	6.00	14.63	18.63	322.0	73.3	4.16	1.98	51.5	29.3	68.3	35.1	208.50	53.10	0.329	68.4	3.3	15.8
	6.30	14.99	19.10	319.4	73.3	4.09	1.96	51.1	29.3	68.8	35.5	214.60	54.20	0.323	66.7	2.9	14.8
125 x 75	3.00	8.96	11.41	242.8	110.5	4.61	3.11	38.9	29.5	47.3	33.3	242.90	49.50	0.390	111.7	20.0	36.7
	4.00	11.73	14.95	310.8	140.7	4.56	3.07	49.7	37.5	61.1	43.0	314.50	63.10	0.386	85.2	13.8	26.3
	4.50	13.08	16.67	342.4	154.5	4.53	3.04	54.8	41.2	67.7	47.5	348.60	69.50	0.385	76.4	11.7	22.8
	5.00	14.41	18.36	372.5	167.7	4.50	3.02	59.6	44.7	74.1	52.0	381.50	75.60	0.383	69.4	10.0	20.0
	6.00	16.98	21.63	428.3	191.8	4.45	2.98	68.5	51.1	86.2	60.3	443.80	86.70	0.379	58.9	7.5	15.8
150 x 50	3.00	8.96	11.41	298.5	52.6	5.12	2.15	39.8	21.1	51.4	23.5	150.20	38.30	0.390	111.7	11.7	45.0
	4.00	11.73	14.95	381.4	66.2	5.05	2.10	50.9	26.5	66.5	30.1	192.10	48.30	0.386	85.2	7.5	32.5
	4.50	13.08	16.67	419.8	72.2	5.02	2.08	56.0	28.9	73.6	33.2	211.60	52.90	0.385	76.4	6.1	28.3
	5.00	14.41	18.36	456.3	77.9	4.99	2.06	60.8	31.1	80.5	36.2	230.10	57.10	0.383	69.4	5.0	25.0
	6.00	16.98	21.63	523.5	87.9	4.92	2.02	69.8	35.2	93.5	41.4	264.00	64.80	0.379	58.9	3.3	20.0
	6.30	17.47	22.25	522.8	88.5	4.85	1.99	69.7	35.4	94.6	42.4	272.20	66.30	0.373	57.3	2.9	18.8
150 x 75	3.00	10.13	12.91	379.6	130.0	5.42	3.17	50.6	34.7	62.5	38.7	311.80	59.80	0.440	98.7	20.0	45.0
	4.00	13.30	16.95	488.0	165.9	5.37	3.13	65.1	44.2	81.1	50.1	404.30	76.60	0.436	75.2	13.8	32.5
	4.50	14.85	18.92	538.9	182.5	5.34	3.11	71.9	48.7	90.0	55.5	448.40	84.40	0.435	67.3	11.7	28.3
	5.00	16.37	20.86	587.7	198.4	5.31	3.08	78.4	52.9	98.6	60.7	491.00	91.90	0.433	61.1	10.0	25.0
	6.00	19.34	24.63	679.1	227.6	5.25	3.04	90.5	60.7	115.1	70.6	572.00	105.80	0.429	51.7	7.5	20.0
	6.30	19.94	25.40	685.6	230.9	5.20	3.01	91.4	61.6	117.2	72.2	595.80	109.10	0.423	50.2	6.9	18.8
	8.00	24.53	31.24	806.3	269.0	5.08	2.93	107.5	71.7	140.8	86.3	714.50	128.50	0.416	40.8	4.4	13.8
9.00	27.07	34.48	865.5	287.3	5.01	2.89	115.4	76.6	153.0	93.6	775.20	138.10	0.411	36.9	3.3	11.7	

Cold Formed Rectangular Hollow Sections

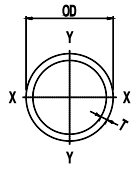
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Mass per unit length	Cross Sectional Area	Second Moment of Area		Radius of Gyration		Elastic Section Modulus		Plastic Section Modulus		Torsional Inertia Constant	Torsional Modulus Constant	Superficial area per meter length	Nominal length per tonne	Ratio for Local Buckling	
Size	Thickness			I_{xx}	I_{yy}	i_{xx}	i_{yy}	W_{elxx}	W_{elyy}	W_{plxx}	W_{plyy}					Flange	Web
H X B	T	M	A	I_{xx}	I_{yy}	i_{xx}	i_{yy}	W_{elxx}	W_{elyy}	W_{plxx}	W_{plyy}	L_t	C_t	A_s	m	B/T	H/T
mm	mm	kg/m	cm ²	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm ³	cm ³	cm ⁴	cm ³	m ² /m			
150 x 100	4.00	14.87	18.95	594.6	318.6	5.60	4.10	79.3	63.7	95.7	72.5	661.60	104.90	0.486	67.2	20.0	32.5
	4.50	16.62	21.17	658.1	352.0	5.58	4.08	87.7	70.4	106.3	80.5	736.10	116.10	0.485	60.2	17.2	28.3
	5.00	18.33	23.36	719.2	384.0	5.55	4.05	95.9	76.8	116.7	88.3	808.70	126.80	0.483	54.5	15.0	25.0
	6.00	21.69	27.63	834.7	444.2	5.50	4.01	111.3	88.8	136.7	103.3	948.30	147.10	0.479	46.1	11.7	20.0
	6.30	22.41	28.55	848.3	452.7	5.45	3.98	113.1	90.5	139.9	105.9	991.60	152.30	0.473	44.6	10.9	18.8
	8.00	27.67	35.24	1008.1	535.7	5.35	3.90	134.4	107.1	169.2	127.9	1205.90	181.80	0.466	36.1	7.5	13.8
	9.00	30.60	38.98	1089.5	577.5	5.29	3.85	145.3	115.5	184.8	139.5	1320.30	197.10	0.461	32.7	6.1	11.7
200 x 100	4.00	18.01	22.95	1199.7	410.8	7.23	4.23	120.0	82.2	148.0	91.7	985.40	141.80	0.586	55.5	20.0	45.0
	4.50	20.15	25.67	1331.4	454.6	7.20	4.21	133.1	90.9	164.9	102.0	1097.10	157.10	0.585	49.6	17.2	39.4
	5.00	22.26	28.36	1456.3	496.9	7.17	4.19	145.9	99.4	181.4	112.1	1206.30	171.90	0.583	44.9	15.0	35.0
	6.00	26.40	33.63	1703.3	576.9	7.12	4.14	170.3	115.4	213.3	131.5	1417.00	200.10	0.579	37.9	11.7	28.3
	6.30	27.36	34.85	1739.2	591.1	7.06	4.12	173.9	118.2	219.1	135.4	1482.80	207.60	0.573	36.6	10.9	26.7
	8.00	33.95	43.24	2090.8	705.4	6.95	4.04	209.1	141.1	267.3	164.7	1810.70	249.60	0.566	29.5	7.5	20.0
	9.00	37.66	47.98	2275.6	764.4	6.89	3.99	227.6	152.9	293.4	180.5	1988.30	271.80	0.561	26.6	6.1	17.2
200 x 150	4.00	21.15	26.95	1583.9	1021.0	7.67	6.16	158.4	136.1	187.2	154.1	1942.00	218.50	0.686	47.3	32.5	45.0
	4.50	23.68	30.17	1761.5	1134.5	7.64	6.13	176.1	151.3	208.9	171.8	2168.50	243.00	0.685	42.2	28.3	39.4
	5.00	26.18	33.36	1934.7	1245.0	7.62	6.11	193.5	166.0	230.1	189.2	2391.40	266.80	0.683	38.2	25.0	35.0
	6.00	31.11	39.63	2268.0	1457.1	7.56	6.06	226.8	194.3	271.5	223.1	2826.20	312.70	0.679	32.1	20.0	28.3
	6.30	32.30	41.15	2330.4	1499.2	7.53	6.04	233.0	199.9	280.1	230.4	2965.40	325.50	0.673	31.0	18.8	26.7
	8.00	40.23	51.24	2828.5	1815.5	7.43	5.95	282.9	242.4	344.1	282.8	3664.90	396.40	0.666	24.9	13.8	20.0
	9.00	44.73	56.98	3097.0	1985.3	7.37	5.90	309.7	264.7	379.4	311.7	4054.80	435.10	0.661	22.4	11.7	17.2
	10.00	49.11	62.57	3347.7	2143.4	7.31	5.85	334.8	285.8	413.1	339.2	4428.40	471.40	0.657	20.4	10.0	15.0
225 x 75	4.50	20.15	25.67	1511.4	266.5	7.67	3.22	134.3	71.1	173.6	79.3	760.47	129.18	0.585	49.6	11.7	45.0
	5.00	22.26	28.36	1655.7	290.4	7.64	3.20	147.2	77.4	190.9	87.0	833.49	140.94	0.583	44.9	10.0	40.0
	6.00	26.40	33.63	1930.8	334.9	7.58	3.16	171.6	89.3	224.3	101.7	972.71	163.02	0.579	37.9	7.5	32.5
	6.30	27.62	35.19	2009.8	347.5	7.56	3.14	178.6	92.7	234.1	105.9	1012.72	169.29	0.578	36.2	6.9	30.7
	8.00	34.38	43.79	2427.6	412.1	7.45	3.07	215.8	109.9	286.6	128.6	1224.13	201.77	0.573	29.1	4.4	23.1
	9.00	38.21	48.67	2650.0	445.0	7.38	3.02	235.6	118.7	315.5	140.8	1336.44	218.58	0.569	26.2	3.3	20.0
	10.00	41.94	53.42	2855.6	474.4	7.31	2.98	253.8	126.5	342.9	152.2	1439.92	233.78	0.566	23.8	2.5	17.5
250 x 150	4.50	27.21	34.67	3003.8	1372.8	9.31	6.29	240.3	183.0	289.9	204.6	2976.90	306.50	0.785	36.7	28.3	50.6
	5.00	30.11	38.67	3304.2	1508.0	9.28	6.27	264.3	201.1	319.8	225.5	3284.50	336.90	0.783	33.2	25.0	45.0
	6.00	35.82	45.63	3885.6	1768.3	9.23	6.23	310.8	135.8	378.0	266.3	3885.80	395.60	0.779	27.9	20.0	36.7
	6.30	37.25	47.45	4001.4	1824.6	9.18	6.20	320.1	243.3	390.9	275.7	4077.70	412.20	0.773	26.8	18.8	34.7
	8.00	46.51	59.24	4885.8	2219.2	9.08	6.12	390.9	295.9	482.2	339.6	5050.40	504.00	0.766	21.5	13.8	26.3
	9.00	51.79	65.98	5368.9	2433.3	9.02	6.07	429.5	324.4	533.1	375.1	5595.80	554.30	0.761	19.3	11.7	22.8
	10.00	56.96	72.57	5825.0	2634.2	8.96	6.02	466.0	351.2	582.0	409.2	6120.70	602.10	0.757	17.6	10.0	20.0
300 x 100	6.00	35.82	45.63	4776.8	842.4	10.23	4.30	318.5	168.5	411.4	187.9	2403.50	306.20	0.779	27.9	11.7	45.0
	6.30	37.25	47.45	4906.8	868.1	10.17	4.28	327.1	173.6	424.9	194.4	255.20	318.30	0.773	26.8	10.9	42.6
	8.00	46.51	59.24	5977.9	1044.8	10.05	4.20	398.5	209.0	523.5	238.3	3080.30	385.20	0.766	21.5	7.5	32.5
	10.00	56.96	72.57	7106.0	1224.4	9.90	4.11	473.7	244.9	630.9	285.2	3681.00	454.50	0.757	17.6	5.0	25.0
300 x 200	5.00	37.96	48.36	6241.1	3360.9	11.36	8.34	416.1	336.1	495.7	376.4	6835.80	551.90	0.983	26.3	35.0	55.0
	6.00	45.24	57.63	7370.2	6962.2	11.31	8.29	491.3	396.2	587.8	446.1	8115.20	651.20	0.979	22.1	28.3	45.0
	6.30	47.14	60.05	7624.4	4103.8	11.27	8.27	508.3	410.4	609.9	463.2	8523.50	679.80	0.973	21.2	26.7	42.6
	8.00	59.07	75.24	9389.3	5041.7	11.17	8.19	626.0	504.2	757.1	674.5	10626.50	838.40	0.966	16.9	20.0	32.5
	9.00	65.92	83.98	10371.4	5561.3	11.11	8.14	691.4	556.1	840.2	637.2	11822.40	927.00	0.961	15.2	17.2	28.3
	10.00	72.66	92.57	11312.7	6057.7	11.05	8.09	754.2	605.8	920.9	698.1	12987.10	1012.20	0.957	13.8	15.0	25.0

Cold Formed Circular Hollow Sections

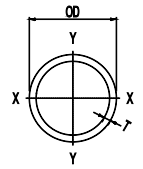
BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Weight per unit length	Cross Sectional Area	Second Moment Of Area	Radius Of Gyration	Elastic Section Modulus	Plastic Section Modulus	Torsional Inertia Constant	Torsional Modulus Constant	Superficial Area per metre length	Nominal length per tonne	Ratio for Local Buckling
Outside Diameter	Thickness											
D	T	M	A	I	i	W _{el}	W _{pl}	L _t	C _t	A _s		D/T
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
21.3	2.0	0.95	1.21	0.571	0.686	0.54	0.75	1.14	1.07	0.0669	1050.5	10.65
	2.5	1.16	1.48	0.664	0.671	0.62	0.89	1.33	1.25	0.0669	862.7	8.52
	3.0	1.35	1.72	0.741	0.656	0.70	1.01	1.48	1.39	0.0669	738.6	7.10
26.9	2.0	1.23	1.56	1.22	0.883	0.91	1.24	2.44	1.81	0.0845	814.2	13.45
	2.5	1.50	1.92	1.44	0.867	1.07	1.49	2.88	2.14	0.0845	664.7	10.76
	3.0	1.77	2.25	1.63	0.852	1.21	1.72	3.27	2.43	0.0845	565.5	8.97
33.7	2.0	1.56	1.99	2.51	1.12	1.49	2.01	5.02	2.98	0.106	639.6	16.85
	2.5	1.92	2.45	3.00	1.11	1.78	2.44	6.00	3.56	0.106	519.9	13.48
	3.0	2.27	2.89	3.44	1.09	2.04	2.84	6.88	4.08	0.106	440.3	11.23
42.4	2.0	1.99	2.54	5.19	1.43	2.45	3.27	10.38	4.90	0.133	501.8	21.20
	2.5	2.46	3.13	6.26	1.41	2.95	3.99	12.52	5.91	0.133	406.5	16.96
	3.0	2.91	3.71	7.25	1.40	3.42	4.67	14.49	6.84	0.133	343.1	14.13
	4.0	3.79	4.83	8.99	1.36	4.24	5.92	17.98	8.48	0.133	264.0	10.60
48.3	2.0	2.28	2.91	7.81	1.64	3.23	4.29	15.62	6.47	0.152	437.9	24.15
	2.5	2.82	3.60	9.46	1.62	3.92	5.25	18.92	7.83	0.152	345.1	19.32
	3.0	3.35	4.27	11.0	1.61	4.55	6.17	22.00	9.11	0.152	298.4	16.10
	4.0	4.37	5.57	13.8	1.57	5.70	7.87	27.54	11.40	0.152	228.8	12.08
	5.0	5.34	6.80	16.2	1.54	6.69	9.42	32.31	13.38	0.152	187.3	9.66
60.3	2.0	2.88	3.66	15.6	2.06	5.17	6.80	31.16	10.34	0.189	347.8	30.15
	2.5	3.56	4.54	19.0	2.05	6.30	8.36	37.99	12.60	0.189	280.6	24.12
	3.0	4.24	5.40	22.2	2.03	7.37	9.86	44.45	14.74	0.189	235.9	20.10
	4.0	5.55	7.07	28.2	2.00	9.34	12.70	56.35	18.69	0.189	180.1	15.08
	5.0	6.82	8.69	33.5	1.96	11.10	15.33	66.95	22.21	0.189	146.7	12.06
76.1	2.0	3.65	4.66	32.0	2.62	8.40	10.98	63.96	16.81	0.239	273.6	38.05
	2.5	4.54	5.78	39.2	2.60	10.30	13.55	78.37	20.60	0.239	220.4	30.44
	3.0	5.41	6.89	46.1	2.59	12.11	16.04	92.19	24.23	0.239	184.9	25.37
	4.0	7.11	9.06	59.1	2.55	15.52	20.81	118.11	31.04	0.239	140.6	19.03
	5.0	8.77	11.17	70.9	2.52	18.64	25.32	141.84	37.28	0.239	114.1	15.22
	6.0	10.37	13.21	81.8	2.49	21.49	29.56	163.52	42.97	0.239	96.4	12.68
	6.3	10.84	13.81	84.8	2.48	22.29	30.78	169.64	44.58	0.239	92.2	12.08
88.9	2.0	4.29	5.46	51.6	3.07	11.60	15.11	103.14	23.20	0.279	233.3	44.45
	2.5	5.33	6.79	63.4	3.06	14.26	18.67	126.75	28.51	0.279	187.7	35.56
	3.0	6.36	8.10	74.8	3.04	16.82	22.15	149.53	33.64	0.279	157.3	29.63
	4.0	8.38	10.67	96.3	3.00	21.67	28.85	192.68	43.35	0.279	119.4	22.23
	5.0	10.35	13.18	116.4	2.97	26.18	35.24	232.75	52.36	0.279	96.7	17.78
	6.0	12.27	15.63	134.9	2.94	30.36	41.31	269.88	60.72	0.279	81.5	14.82
	6.3	12.83	16.35	140.2	2.93	31.55	43.07	280.47	63.10	0.279	77.9	14.11
101.6	2.5	6.11	7.78	95.6	3.50	18.82	24.56	191.22	37.64	0.319	163.7	40.64
	3.0	7.29	9.29	113.0	3.49	22.25	29.17	226.07	44.50	0.319	121.4	33.87
	4.0	9.63	12.26	146.3	3.45	28.80	38.12	292.57	57.59	0.319	103.9	25.40
	5.0	11.91	15.17	177.5	3.42	34.93	46.70	354.94	69.87	0.319	84.0	20.32
	6.0	14.15	18.02	206.7	3.39	40.68	54.91	413.35	81.37	0.319	70.7	16.93
	6.3	14.81	18.86	215.1	3.38	42.34	57.30	430.13	84.67	0.319	67.5	16.13
114.3	2.5	6.89	8.78	137.3	3.95	24.02	31.25	274.52	48.03	0.359	145.1	45.72
	3.0	8.23	10.49	162.5	3.94	28.44	37.17	325.10	56.88	0.359	121.4	38.10
	4.0	10.88	13.86	211.1	3.90	36.93	48.69	422.13	73.86	0.359	91.9	28.58
	5.0	13.48	17.17	256.9	3.87	44.96	59.77	513.84	89.91	0.359	74.2	22.86
	6.0	16.03	20.41	300.2	3.83	52.53	70.45	600.42	105.06	0.359	62.4	19.05
	6.3	16.78	21.38	312.7	3.82	54.72	73.57	625.43	109.44	0.359	59.6	18.14
	8.0	20.97	26.72	379.5	3.77	66.40	90.57	758.98	132.81	0.359	47.7	14.29

Cold Formed Circular Hollow Sections

BS EN 10219 / MANUFACTURER'S STANDARD



Specified Dimension		Weight per unit length	Cross Sectional Area	Second Moment Of Area	Radius Of Gyration	Elastic Section Modulus	Plastic Section Modulus	Torsional Inertia Constant	Torsional Modulus Constant	Superficial Area per metre length	Nominal length per tonne	Ratio for Local Buckling
Outside Diameter	Thickness											
D	T	M	A	I	i	W _{el}	W _{pl}	L _t	C _t	A _s		D/T
mm	mm	kg/m	cm ²	cm ⁴	cm	cm ³	cm ³	cm ⁴	cm ³	m ² /m	m	
139.7	3.0	10.11	12.88	301.1	4.83	43.11	56.07	602.18	86.21	0.439	98.9	46.57
	4.0	13.39	17.05	392.9	4.80	56.24	73.68	785.72	112.49	0.439	74.7	34.93
	5.0	16.61	21.16	480.5	4.77	68.80	90.76	961.08	137.59	0.439	60.2	27.94
	6.0	19.78	25.20	564.3	4.73	80.78	107.33	1128.52	161.56	0.439	50.5	23.28
	6.3	20.73	26.40	588.6	4.72	84.27	112.20	1177.24	168.54	0.439	48.2	22.17
	8.0	26.00	33.10	720.3	4.66	103.12	138.93	1440.58	206.24	0.439	38.5	17.46
	10.0	32.00	40.75	861.9	4.60	123.39	168.55	1723.79	246.78	0.439	31.3	13.97
168.3	4.0	16.21	20.65	697.1	5.81	82.84	108.00	1394.18	165.68	0.529	61.7	42.08
	5.0	20.14	25.65	855.8	5.78	101.70	133.38	1711.69	203.41	0.529	49.7	33.66
	6.0	24.02	30.59	1008.7	5.74	119.87	158.12	2017.39	239.74	0.529	41.6	28.05
	6.3	25.17	32.06	1053.4	5.73	125.18	165.42	2106.84	250.37	0.529	39.7	26.71
	8.0	31.63	40.29	1297.3	5.67	154.16	205.74	2594.54	308.32	0.529	31.6	21.04
	10.0	39.04	49.73	1564.0	5.61	185.86	250.92	3127.97	371.71	0.529	25.6	16.83
177.8	4.0	17.14	21.84	825.1	6.15	92.81	120.85	1650.17	185.62	0.559	58.3	44.45
	5.0	21.31	27.14	1014.0	6.11	114.06	149.34	2027.94	228.11	0.559	46.9	35.56
	6.0	25.42	32.38	1196.2	6.08	134.56	177.16	2392.43	269.12	0.559	39.3	29.63
	6.3	26.65	33.94	1249.6	6.07	140.56	185.38	2499.24	281.13	0.559	37.5	28.22
	8.0	33.50	42.68	1541.4	6.01	173.39	230.83	3082.87	346.78	0.559	29.9	22.23
	10.0	41.38	52.72	1862.0	5.94	209.45	281.90	3723.96	418.89	0.559	24.2	17.78
193.7	4.0	18.71	23.84	1072.8	6.71	110.77	143.97	2145.58	221.54	0.609	53.4	48.43
	5.0	23.27	29.64	1320.2	6.67	136.32	178.08	2640.46	272.63	0.609	43.0	38.74
	6.0	27.77	35.38	1559.7	6.64	161.05	211.46	3119.45	322.09	0.609	36.0	32.28
	6.3	29.12	37.09	1630.0	6.63	168.31	221.33	3260.09	336.61	0.609	34.3	30.75
	8.0	36.64	46.67	2015.5	6.57	208.11	276.05	4031.07	416.22	0.609	27.3	24.21
	10.0	45.30	57.71	2441.6	6.50	252.10	337.79	4883.18	504.20	0.609	22.1	19.37
219.1	4.0	21.22	27.03	1563.8	7.61	142.75	185.09	3127.67	285.50	0.688	47.1	54.78
	5.0	26.40	33.63	1928.0	7.57	176.00	229.24	3856.09	351.99	0.688	37.9	43.82
	6.0	31.53	40.17	2281.9	7.54	208.30	272.54	4563.89	416.60	0.688	31.7	36.52
	6.3	33.06	42.12	2386.1	7.53	217.81	285.37	4772.28	435.63	0.688	30.2	34.78
	8.0	41.65	53.06	2959.6	7.47	270.16	356.68	5919.27	540.33	0.688	24.0	27.39
	10.0	51.57	65.69	3598.4	7.40	328.47	437.56	7196.88	656.95	0.688	19.4	21.91
273	6.0	39.51	50.33	4487.1	9.44	328.72	427.81	8974.17	657.45	0.858	25.3	45.50
	6.3	41.44	52.79	4695.8	9.43	344.02	448.20	9391.65	688.03	0.858	24.1	43.33
	8.0	52.28	66.60	5851.7	9.37	428.70	561.97	11703.43	857.39	0.858	19.1	34.13
	10.0	64.86	82.62	7154.1	9.31	524.11	692.02	14308.19	1048.22	0.858	15.4	27.30
323.9	6.0	47.04	59.92	7572.5	11.24	467.58	606.43	15144.93	935.16	1.018	21.3	53.98
	6.3	49.34	62.86	7928.9	11.23	489.59	635.56	15857.79	979.18	1.018	20.3	51.41
	8.0	62.32	79.39	9910.1	11.17	611.92	798.51	19820.16	1223.84	1.018	16.0	40.49
	10.0	77.41	98.61	12158.3	11.10	750.75	985.67	24316.68	1501.49	1.018	12.9	32.39
355.6	6.0	51.73	65.90	10070.6	12.36	566.40	733.39	20141.11	1132.80	1.117	19.3	59.27
	6.3	54.27	69.13	10547.2	12.35	593.21	768.75	21094.41	1186.41	1.117	18.4	56.44
	8.0	68.58	87.36	13201.4	12.29	742.48	966.78	26402.75	1484.97	1.117	14.6	44.45
	10.0	85.23	108.57	16223.5	12.22	912.46	1194.73	32447.00	1824.92	1.117	11.7	35.56

Carbon Steel Tube For Machine Structural Purposes

AVAILABLE IN COLD ROLLED, HOT ROLLED AND ALUMINISED STEEL MATERIALS

JIS G 3445 STKM 11 A/MANUFACTURER'S STANDARD

NOMINAL SIZE	OUTER DIAMETER		THICKNESS												
			SWG	19				18				17			
			mm	1.0				1.2				1.4			
			in	0.039				0.047				0.065			
mm	in	mm	kg/m	kg/6m	kg/ft	lb/ft	kg/m	kg/6m	kg/ft	lb/ft	kg/m	kg/6m	kg/ft	lb/ft	
10	3/8	9.5	0.210	1.260	0.0639	0.141									
12	1/2	12.7	0.289	1.734	0.088	0.194	0.340	2.040	0.104	0.229	0.390	2.340	0.119	0.262	
16	5/8	15.9	0.368	2.208	0.112	0.247	0.435	2.610	0.133	0.293	0.501	3.006	0.153	0.337	
19	3/4	19.1	0.447	2.682	0.136	0.300	0.530	3.180	0.162	0.357	0.611	3.666	0.186	0.410	
22	7/8	22.2	0.523	3.138	0.159	0.351	0.622	3.732	0.189	0.417	0.718	4.308	0.219	0.483	
25	1	25.4	0.602	3.612	0.183	0.404	0.716	4.296	0.218	0.481	0.829	4.974	0.253	0.588	
28	1 1/8	28.6	0.681	4.086	0.208	0.459	0.811	4.886	0.247	0.545	0.939	5.634	0.286	0.631	
32	1 1/4	31.8	0.760	4.560	0.232	0.512	0.906	5.436	0.276	0.609	1.050	6.300	0.320	0.706	
35	1 3/8	34.9					1.000	6.000	0.304	0.670	1.160	6.960	0.354	0.781	
38	1 1/2	38.1					1.092	6.552	0.333	0.734	1.267	7.602	0.386	0.851	
41	1 5/8	41.3					1.187	7.122	0.362	0.798	1.378	8.268	0.420	0.926	
44	1 3/4	44.5					1.281	7.686	0.391	0.862	1.488	8.928	0.454	1.001	
47	1 7/8	47.6					1.373	8.238	0.419	0.924	1.595	9.570	0.486	1.072	
50	2	50.8					1.468	8.808	0.447	0.986	1.705	10.230	0.520	1.146	
54	2 1/8	54					1.563	9.378	0.476	1.049	1.816	10.896	0.554	1.221	
57	2 1/4	57.2									1.926	11.556	0.587	1.294	
60	2 3/8	60.3									2.033	12.198	0.620	1.367	
65	2 1/2	63.5									2.144	12.864	0.653	1.440	

Carbon Steel Tube For Machine Structural Purposes

AVAILABLE IN COLD ROLLED, HOT ROLLED AND ALUMINISED STEEL MATERIALS

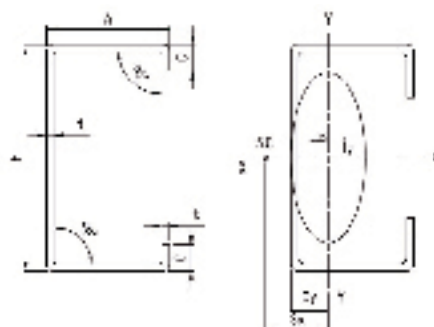
JIS G 3445 STKM 11 A/MANUFACTURER'S STANDARD

NOMINAL SIZE	OUTER DIAMETER		THICKNESS												
			SWG	16				15				14			
			mm	1.6				1.8				2.0			
			in	0.063				0.071				0.079			
mm	in	mm	kg/m	kg/6m	kg/ft	lb/ft	kg/m	kg/6m	kg/ft	lb/ft	kg/m	kg/6m	kg/ft	lb/ft	
12	1/2	12.7	0.438	2.628	0.134	0.296	0.484	2.904	0.148	0.326	0.528	3.168	0.161	0.355	
16	5/8	15.9	0.564	3.384	0.172	0.379	0.626	3.756	0.191	0.421	0.686	4.116	0.209	0.461	
19	3/4	19.1	0.691	4.146	0.211	0.465	0.768	4.608	0.234	0.516	0.844	5.064	0.257	0.567	
22	7/8	22.2	0.813	4.878	0.248	0.547	0.906	5.436	0.276	0.609	0.996	5.976	0.304	0.670	
25	1	25.4	0.939	5.634	0.286	0.631	1.048	6.288	0.319	0.703	1.154	6.924	0.352	0.776	
28	1 1/8	28.6	1.066	6.396	0.325	0.717	1.190	7.140	0.363	0.800	1.312	7.872	0.400	0.882	
32	1 1/4	31.8	1.192	7.152	0.363	0.800	1.332	7.992	0.406	0.895	1.470	8.820	0.448	0.988	
35	1 3/8	34.9	1.318	7.908	0.402	0.886	1.469	8.814	0.448	0.988	1.623	9.738	0.495	1.091	
38	1 1/2	38.1	1.440	8.640	0.439	0.968	1.612	9.672	0.491	1.083	1.781	10.686	0.543	1.197	
41	1 5/8	41.3	1.567	9.402	0.478	1.054	1.754	10.524	0.534	1.177	1.938	11.628	0.591	1.303	
44	1 3/4	44.5	1.693	10.158	0.516	1.138	1.896	11.376	0.578	1.274	2.096	12.576	0.639	1.409	
47	1 7/8	47.6	1.815	10.890	0.553	1.219	2.033	12.198	0.620	1.367	2.249	13.494	0.686	1.512	
50	2	50.8	1.942	11.652	0.592	1.305	2.175	13.050	0.663	1.462	2.407	14.442	0.734	1.618	
54	2 1/8	54.0	2.068	12.408	0.630	1.389	2.317	13.902	0.706	1.557	2.565	15.390	0.782	1.724	
57	2 1/4	57.2	2.194	13.164	0.669	1.475	2.459	14.754	0.750	1.654	2.723	16.338	0.830	1.830	
60	2 3/8	60.3	2.316	13.896	0.706	1.557	2.597	15.582	0.792	1.746	2.876	17.256	0.877	1.934	
65	2 1/2	63.5	2.443	14.658	0.745	1.642	2.739	16.434	0.835	1.841	3.033	18.198	0.925	2.039	

Lipped Channel

JIS G 3350 /MANUFACTURER'S STANDARD

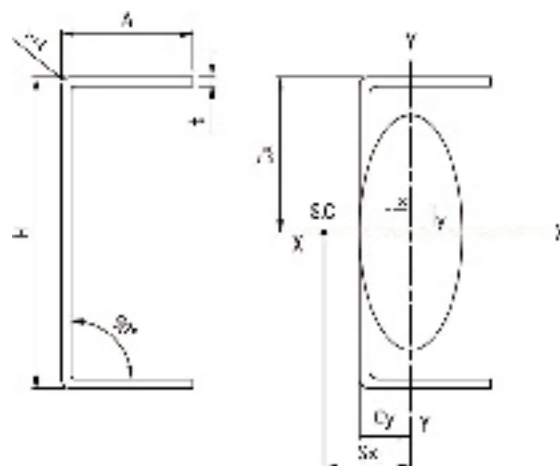
Dimension mm (in)		Sectional Area	Calculated Weight	Centre of Gravity		Secondary Moment of Area		Radius of Gyration of Area		Modulus Section		Centre of Shear	
				C_x	C_y	I_x	I_y	i_x	i_y	Z_x	Z_y	S_x	S_y
H x A x C	t	cm ²	kg/m	cm	cm	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm	cm
250 x 75 x 25 (10 x 3 x 1)	4.5	18.92	14.90	0	2.07	1690.0	129.0	9.44	2.62	135.0	23.80	5.10	0
	4.0	16.90	13.00	0	2.07	1518.0	120.0	9.48	2.66	121.4	22.00	5.20	0
	3.2	13.96	10.96	0	2.07	1265.0	100.0	9.52	2.68	101.2	18.40	5.20	0
	3.0	12.90	10.10	0	2.07	1177.0	94.0	9.54	2.69	94.1	17.30	5.20	0
250 x 75 x 20 (10 x 3 x ¾)	4.5	18.46	14.50	0	1.94	1638.0	116.0	9.41	2.51	131.0	21.00	4.94	0
	4.0	16.51	12.96	0	1.95	1477.0	109.1	9.46	2.57	118.2	19.70	4.97	0
	3.2	13.41	10.52	0	1.95	1210.0	89.2	9.5	2.58	96.8	16.10	4.99	0
	3.0	12.60	9.89	0	1.95	1145.0	85.1	9.52	2.59	91.6	15.30	5.00	0
225 x 75 x 25 (9 x 3 x 1)	4.5	17.79	14.00	0	2.18	1310.0	125.0	8.57	2.64	116.0	23.50	5.33	0
	4.0	15.92	12.50	0	2.19	1182.0	115.9	8.62	2.70	105.9	21.80	5.40	0
	3.2	12.93	10.15	0	2.19	969.5	95.6	8.66	2.72	86.2	18.00	5.42	0
	3.0	12.15	9.54	0	2.19	916.3	90.7	8.68	2.73	81.5	17.10	5.43	0
225 x 75 x 20 (9 x 3 x ¾)	4.5	17.34	13.60	0	2.05	1273.0	113.0	8.56	2.55	113.0	20.70	5.10	0
	4.0	15.53	12.19	0	2.06	1151.0	105.8	8.61	2.61	102.3	19.50	5.12	0
	3.2	12.61	9.90	0	2.06	943.3	86.5	8.65	2.62	8.4	15.90	5.13	0
	3.0	11.85	9.30	0	2.06	892.0	82.6	8.67	2.63	79.3	15.20	5.13	0
200 x 75 x 25 (8 x 3 x 1)	4.5	16.67	13.10	0	2.32	990.0	121.0	7.71	2.69	99.0	23.30	5.60	0
	4.0	14.95	11.70	0	2.32	895.0	110.0	7.74	2.72	89.5	21.30	5.70	0
	3.2	12.10	9.52	0	2.33	736.0	92.3	7.79	2.76	73.6	17.80	5.70	0
	3.0	11.41	8.96	0	2.33	694.0	88.2	7.8	2.78	69.4	17.10	5.80	0
200 x 75 x 20 (8 x 3 x ¾)	4.5	16.22	12.70	0	2.19	963.0	109.0	7.71	2.60	96.3	20.60	5.30	0
	4.0	14.55	11.40	0	2.19	871.0	100.0	7.74	2.62	87.1	18.90	5.30	0
	3.2	11.81	9.27	0	2.19	716.0	84.1	7.79	2.67	71.6	15.80	5.40	0
	3.0	11.10	8.72	0	2.20	676.0	80.4	7.8	2.69	67.6	15.20	5.40	0
175 x 75 x 20 (7 x 3 x ¾)	4.5	15.09	11.80	0	2.33	702.0	104.0	6.81	2.62	80.2	20.10	5.63	0
	4.0	13.55	10.60	0	2.33	636.0	95.9	6.85	2.66	72.7	18.60	5.65	0
	3.2	11.00	8.64	0	2.34	521.0	79.6	6.88	2.69	59.5	15.40	5.66	0
	3.0	10.35	8.13	0	2.34	495.0	76.3	6.91	2.71	56.6	14.80	5.67	0
150 x 65 x 20 (6 x 2½ x ¾)	4.5	13.06	10.25	0	2.10	441.0	68.8	5.8	2.29	58.8	15.60	5.00	0
	4.0	11.75	9.22	0	2.11	401.0	63.7	5.84	2.33	53.5	14.50	5.00	0
	3.2	9.57	7.51	0	2.11	332.0	53.8	5.89	2.37	44.3	12.20	5.10	0
	3.0	9.01	7.07	0	2.11	342.0	51.5	5.91	2.39	42.0	11.70	5.10	0
125 x 50 x 20 (5 x 2 x ¾)	4.5	10.59	8.32	0	1.68	238.0	33.5	4.74	1.78	38.0	10.00	4.00	0
	4.0	9.55	7.50	0	1.68	217.0	33.1	4.77	1.81	34.7	9.38	4.00	0
	3.2	7.81	6.13	0	1.68	181.0	26.6	4.82	1.85	29.0	8.02	4.00	0
	3.0	7.36	5.78	0	1.68	170.0	25.5	4.8	1.86	27.1	7.68	4.00	0
100 x 50 x 20 (4 x 2 x ¾)	4.5	9.47	7.43	0	1.86	139.0	30.9	3.82	1.81	27.7	9.82	4.30	0
	4.0	8.55	6.71	0	1.86	127.0	28.7	3.85	1.83	25.4	9.13	4.30	0
	3.2	7.01	5.50	0	1.86	107.0	24.5	3.9	1.87	21.3	7.81	4.40	0
	3.0	6.61	5.19	0	1.86	101.5	23.6	3.92	1.89	20.3	7.52	4.40	0
2.3	5.17	4.06	0	1.86	80.7	19.0	3.95	1.92	16.1	6.06	4.40	0	



Mild Steel Plain Channels

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Dimension mm		Sectional Area	Calculated Weight	Centre of Gravity	Secondary Moment of Area		Radius of Gyration of Area		Modulus of Section		Centre of Shear
H x A x B	t				C_y	I_x	I_y	i_x	i_y	Z_x	
		cm ²	kg/m	cm	cm ⁴	cm ⁴	cm	cm	cm ³	cm ³	cm
60 x 30	1.6	1.83	1.44	0.82	10.30	1.64	2.37	0.95	3.45	0.75	1.12
	2.3	2.58	2.03	0.86	14.20	2.27	2.34	0.94	4.72	1.06	1.12
75 x 45	1.6	2.55	2.00	1.30	23.86	5.38	3.05	1.45	6.36	1.68	1.76
	2.3	3.62	2.84	1.33	33.08	7.51	3.02	1.44	8.82	2.37	1.76
	3.0	4.75	3.65	1.37	41.58	9.51	2.98	1.42	11.08	3.04	1.76
100 x 50	1.6	3.11	2.44	1.32	50.00	7.88	4.00	1.59	10.00	2.14	3.10
	2.3	4.42	3.47	1.36	69.60	11.10	3.97	1.58	14.00	3.04	3.10
	3.0	5.70	4.47	1.39	88.50	14.10	3.94	1.57	17.70	3.90	3.10
125 x 50	2.3	5.00	3.92	1.21	117.00	11.90	4.85	1.54	18.80	3.13	2.80
	3.0	6.45	5.06	1.24	149.00	15.10	4.81	1.53	23.90	4.03	2.80
	4.5	9.45	7.42	1.31	212.00	21.60	4.73	1.51	33.90	5.85	2.80
150 x 65	2.3	6.26	4.91	1.61	218.00	25.90	5.90	2.03	29.10	5.30	3.80
	3.0	8.10	6.36	1.64	276.00	33.20	5.87	2.02	37.20	6.83	3.80
	4.0	10.67	8.38	1.69	361.00	43.10	5.82	2.01	48.20	8.96	3.80
	4.5	11.93	9.36	1.71	400.00	47.90	5.79	2.00	53.40	10.00	3.70
175 x 75	2.3	7.30	5.73	1.83	347.00	40.20	6.89	2.35	39.60	7.10	4.40
	3.0	9.45	7.42	1.86	445.00	51.70	6.86	2.34	50.80	9.17	4.40
	4.0	12.47	9.79	1.91	578.00	67.40	6.81	2.32	66.10	12.10	4.30
	4.5	13.95	10.95	1.93	643.00	75.00	6.78	2.32	73.40	13.50	4.30
200 x 75	2.3	7.87	6.18	1.71	473.00	41.80	7.75	2.30	47.30	7.22	4.10
	3.0	10.20	8.01	1.74	608.00	53.70	7.72	2.29	60.80	9.32	4.10
	4.0	13.47	10.58	1.78	792.00	70.10	7.67	2.28	79.20	12.30	4.10
	4.5	15.08	11.80	1.80	881.00	78.00	7.64	2.27	88.10	13.70	4.10
225 x 75	2.3	8.45	6.63	1.60	624.00	43.20	8.60	2.26	55.50	7.31	3.90
	3.0	10.95	8.59	1.63	803.00	55.50	8.56	2.25	71.30	9.45	3.90
	4.0	14.47	11.36	1.67	1048.00	72.40	8.51	2.24	93.00	12.40	3.90
	4.5	16.20	12.72	1.70	1166.00	80.60	8.48	2.23	104.00	13.90	3.90
250 x 75	2.3	9.02	7.09	1.50	802.00	44.30	9.43	2.22	64.20	7.40	3.80
	3.0	11.70	9.19	1.54	1032.00	57.00	9.39	2.21	82.50	9.56	3.70
	4.0	15.47	12.10	1.58	1348.00	74.50	9.33	2.19	108.00	12.60	3.70
	4.5	17.33	13.60	1.60	1502.00	82.90	9.31	2.19	120.00	14.10	3.70

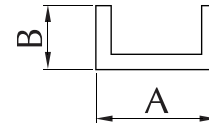


Special Sizes

GATE CHANNEL

MANUFACTURER'S STANDARD

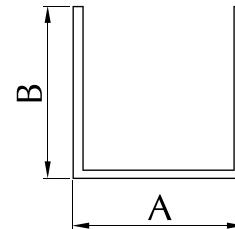
Dimension (B x A x B) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
10 x 19 x 10	2.3	0.58	3.48



U-CHANNEL

MANUFACTURER'S STANDARD

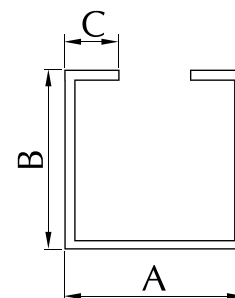
Dimension (A x B) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
25 x 25	1.6	0.88	5.28
30 x 30	1.6	1.00	6.00



TROLLEY TRACK

MANUFACTURER'S STANDARD

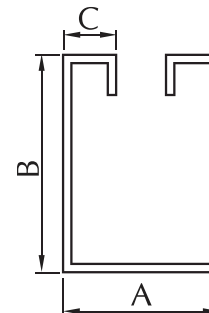
Dimension (A x B x C) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
50 x 50 x 15	1.6	2.13	12.78
	2.3	2.98	17.88
	3.0	3.77	22.62



DOOR RAIL TRACK

MANUFACTURER'S STANDARD

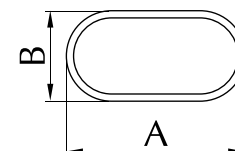
Dimension (A x B x C) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
44 x 65 x 15	1.6	2.17	13.02
	2.3	3.21	19.26



OBLONG TUBES

MANUFACTURER'S STANDARD

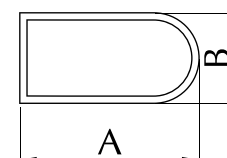
Dimension (A x B) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
19 x 10	1.10	0.40	2.40
19 x 11	0.70	0.28	1.68
24 x 12	1.10	0.48	2.88
32 x 16	2.00	1.13	6.78
46 x 20	2.30	1.89	11.34
50 x 25	2.00	1.86	11.16
	2.30	2.15	12.90
59 x 30	1.60	1.80	10.80



D - TUBE

MANUFACTURER'S STANDARD

Dimension (A x B) mm	Thickness mm	Calculated weight	
		kg/m	kg/6m
50 x 25	1.20	1.20	7.20



Hot Dip Galvanising Services

BS EN ISO 1461 : 2009 Hot dip galvanized coating on fabricated iron and steel articles

Table 1 – Coating minimum masses (related to thicknesses) on samples that are not centrifuged

Article and its thickness	Local coating (minimum) ^b	Local coating (minimum) ^a	Mean coating (minimum) ^b	Mean coating (minimum) ^a
	mass, g/m ²	thickness, µm	mass, g/m ²	thickness, µm
Steel > 6 mm	505	70	610	85
Steel > 3 mm to ≤ 6 mm	395	55	505	70
Steel ≥ 1.5 mm to ≤ 3 mm	325	45	395	55
Steel < 1.5 mm	250	35	325	45
Castings ≥ 6 mm	505	70	575	80
Castings < 6 mm	430	60	505	70

NOTE: This table is for general use: individual product standards may include different requirements including different categories of thickness. Local coating mass and mean coating mass requirements are set out in this table for reference in such cases of dispute.

- a Mean value of coating thickness obtained from the specific number of measurement within a reference area for a magnetic test or the single value from a gravimetric test.
- b Equivalent coating mass using a nominal coating density of 7,2 g/cm³.
- c Average value of the local thickness.

Table 2 – Coating minimum masses (related to thicknesses) on samples that are centrifuged

Article and its thickness	Local coating (minimum) ^b	Local coating (minimum) ^a	Mean coating (minimum) ^b	Mean coating (minimum) ^c
	mass, g/m ²	thickness, µm	mass, g/m ²	thickness, µm
	Articles with threads:			
> 6 mm diameter	285	40	360	50
≤ 6 mm diameter	145	20	180	25
	Other articles (including castings) :			
≥ 3 mm	325	45	395	55
< 3mm	250	35	325	45

NOTE This table is for general use: fastener coating standards and individual product standards may have different requirements. Local coating mass and mean coating mass requirements are set out in this table for reference in such cases of dispute.

- a Mean value of coating thickness obtained from the specific number of measurement within a reference area for a magnetic test or the single value from a gravimetric test.
- b Equivalent coating mass using a nominal coating density of 7,2 g/cm³.
- c Average value of the local thickness.

Conversion Table Of Zinc Coating

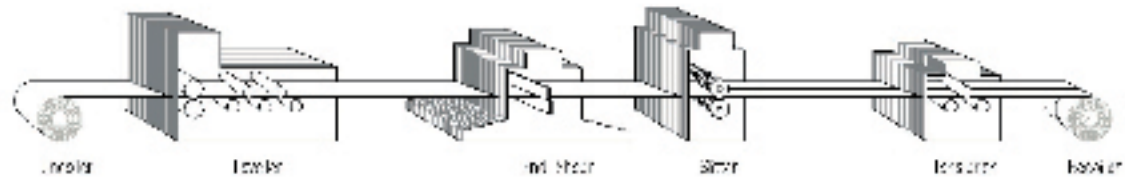
Coating weight		Thickness	
oz/ft ²	g/m ²	mil 1/1000 (in)	μ 1/1000 (mm)
0.40	122.0	0.67	17.0
0.42	128.1	0.70	17.9
0.44	134.2	0.74	18.7
0.46	140.3	0.77	19.6
0.48	146.3	0.81	20.4
0.50	152.5	0.84	21.3
0.52	158.6	0.87	22.2
0.54	164.7	0.91	23.0
0.56	170.8	0.94	23.9
0.58	176.9	0.97	24.7
0.60	183.0	1.01	25.6
0.62	189.1	1.04	26.4
0.64	195.2	1.07	27.3
0.66	201.3	1.11	28.1
0.68	207.4	1.14	29.0
0.70	213.5	1.17	29.8
0.72	219.6	1.21	30.7
0.74	225.7	1.24	31.5
0.76	231.8	1.27	32.4
0.78	237.9	1.31	33.2
0.80	244.0	1.34	34.1
0.82	250.1	1.38	34.9
0.84	256.2	1.41	35.8
0.86	262.3	1.44	36.6
0.88	268.4	1.48	37.5
0.90	274.5	1.51	38.3
0.92	280.6	1.54	39.2
0.94	286.7	1.58	40.0
0.96	292.8	1.61	40.9
0.98	298.9	1.64	41.7
1.00	305.0	1.68	42.6
1.02	311.1	1.71	43.4
1.04	317.2	1.74	44.3
1.06	323.3	1.78	45.2
1.08	329.4	1.81	46.0
1.10	335.5	1.84	46.9
1.12	341.6	1.88	47.7
1.14	347.7	1.91	48.6
1.16	353.8	1.95	49.4
1.18	359.9	1.98	50.3
1.20	366.0	2.01	51.1
1.22	372.1	2.05	52.0
1.24	378.2	2.08	52.8
1.26	384.3	2.11	53.7
1.28	390.4	2.15	54.5
1.30	396.5	2.18	55.4
1.32	402.6	2.21	56.2
1.34	408.7	2.25	57.1
1.36	414.8	2.28	57.9
1.38	420.9	2.31	58.8
1.40	427.0	2.35	59.6
1.42	433.1	2.38	60.5
1.44	439.2	2.41	61.3
1.46	445.3	2.45	62.2

Coating weight		Thickness	
oz/ft ²	g/m ²	mil 1/1000 (in)	μ 1/1000 (mm)
1.48	451.4	2.48	63.0
1.50	457.5	2.52	63.9
1.52	463.6	2.55	64.7
1.54	469.7	2.58	65.6
1.56	475.8	2.62	66.4
1.58	481.9	2.65	67.3
1.60	488.0	2.68	68.2
1.62	494.1	2.72	69.0
1.64	500.2	2.75	69.9
1.66	506.3	2.78	70.7
1.68	512.4	2.82	71.6
1.70	518.5	2.85	72.4
1.72	524.6	2.88	73.3
1.74	530.7	2.92	74.1
1.76	536.8	2.95	75.0
1.78	542.9	2.99	75.8
1.80	549.0	3.02	76.7
1.82	555.1	3.05	77.5
1.84	561.2	3.09	78.4
1.86	567.3	3.12	79.2
1.88	573.4	3.15	80.1
1.90	579.5	3.19	80.9
1.92	585.6	3.22	81.8
1.94	591.7	3.25	82.6
1.96	597.8	3.29	83.5
1.98	603.9	3.32	84.3
2.00	610.0	3.35	85.2
2.02	616.1	3.39	86.0
2.04	622.2	3.42	86.9
2.06	628.3	3.45	87.7
2.08	634.4	3.49	88.6
2.10	640.5	3.52	89.4
2.12	646.6	3.55	90.3
2.14	652.7	3.59	91.1
2.16	658.8	3.62	92.0
2.18	664.9	3.66	92.9
2.20	671.0	3.69	93.7
2.22	677.1	3.72	94.6
2.24	683.2	3.76	95.4
2.26	689.3	3.79	96.3
2.28	695.4	3.82	97.1
2.30	701.5	3.86	98.0
2.32	707.6	3.89	98.8
2.34	713.7	3.92	99.7
2.36	719.8	3.96	100.5
2.38	725.9	3.99	101.4
2.40	732.0	4.02	102.2
2.42	738.1	4.06	103.1
2.44	744.2	4.09	103.9
2.46	750.3	4.12	104.8
2.48	756.4	4.16	105.6
2.50	762.5	4.19	106.5
2.52	768.6	4.23	107.3
2.54	774.7	4.26	108.2

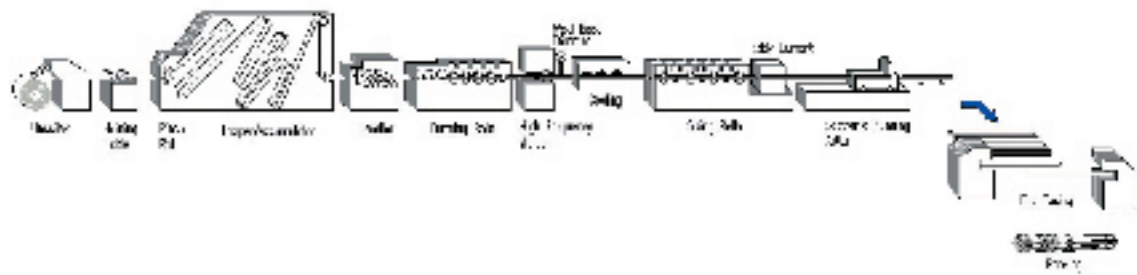
Coating weight		Thickness	
oz/ft ²	g/m ²	mil 1/1000 (in)	μ 1/1000 (mm)
2.56	780.8	4.29	109.0
2.58	786.9	4.33	109.9
2.60	793.0	4.36	110.7
2.62	799.1	4.39	111.6
2.64	805.2	4.43	112.3
2.66	811.3	4.46	113.4
2.68	817.4	4.49	114.1
2.70	823.5	4.53	115.0
2.72	829.6	4.56	115.8
2.74	835.7	4.59	116.7
2.76	841.8	4.63	117.5
2.78	847.9	4.66	118.4
2.80	854.0	4.69	119.2
2.82	860.1	4.73	120.1
2.84	866.2	4.76	120.9
2.86	872.3	4.79	121.8
2.88	878.4	4.83	122.6
2.90	884.5	4.86	123.5
2.92	890.6	4.89	124.3
2.94	896.7	4.93	125.2
2.96	902.8	4.96	126.0
2.98	908.9	4.99	126.9
3.00	915.0	5.03	127.7
3.02	921.1	5.06	128.6
3.04	927.2	5.09	129.4
3.06	933.3	5.13	130.3
3.08	939.4	5.16	131.1
3.10	945.5	5.20	132.0
3.12	951.6	5.23	132.8
3.14	957.7	5.26	133.7
3.16	963.8	5.30	134.5
3.18	969.9	5.33	135.4
3.20	976.0	5.36	136.2
3.22	982.1	5.40	137.1
3.24	988.2	5.43	137.9
3.26	994.3	5.46	138.8
3.28	1000.4	5.50	139.6
3.30	1006.5	5.53	140.5
3.32	1012.6	5.56	141.3
3.34	1018.7	5.60	142.2
3.36	1024.8	5.63	143.0
3.38	1030.9	5.66	143.9
3.40	1037.0	5.70	144.7
3.42	1043.1	5.73	145.6
3.44	1049.2	5.76	146.4
3.46	1055.3	5.80	147.3
3.48	1061.4	5.83	148.1
3.50	1067.5	5.86	149.0
3.52	1073.6	5.90	149.8
3.54	1079.7	5.93	150.7
3.56	1085.8	5.97	151.5
3.58	1091.9	6.00	152.4
3.60	1098.0	6.03	153.2

Mill Processing Flow

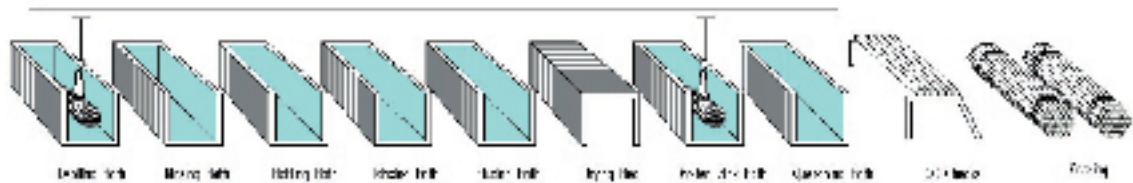
STAGE 1 : SLITTING LINE



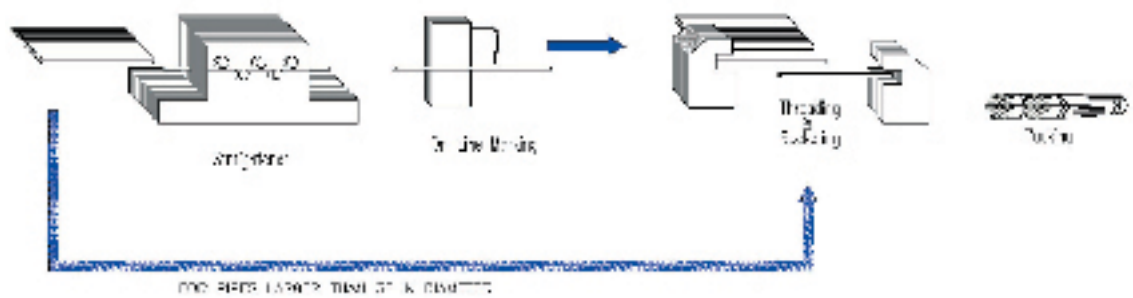
STAGE 2 : PIPE MILL



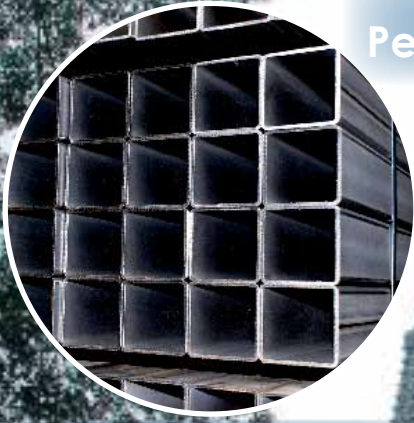
STAGE 3 : GALVANISING PLANT



STAGE 4 : STRAIGHTENING, THREADING & SOCKETING



Products Supplied for Petronas Twin Towers Project



SQUARE HOLLOW SECTIONS



GALVANISED PIPES

MIG-MELEWAR



BLACK WELDED PIPES



RECTANGULAR HOLLOW SECTIONS

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ROUND PIPES



ROUND PIPES



ROUND PIPES



SQUARE HOLLOW SECTIONS



SQUARE HOLLOW SECTIONS



RECTANGULAR HOLLOW SECTIONS

MELEWAR STEEL TUBE SDN. BHD.

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GPS location : N03°04.276' E101°32.843'