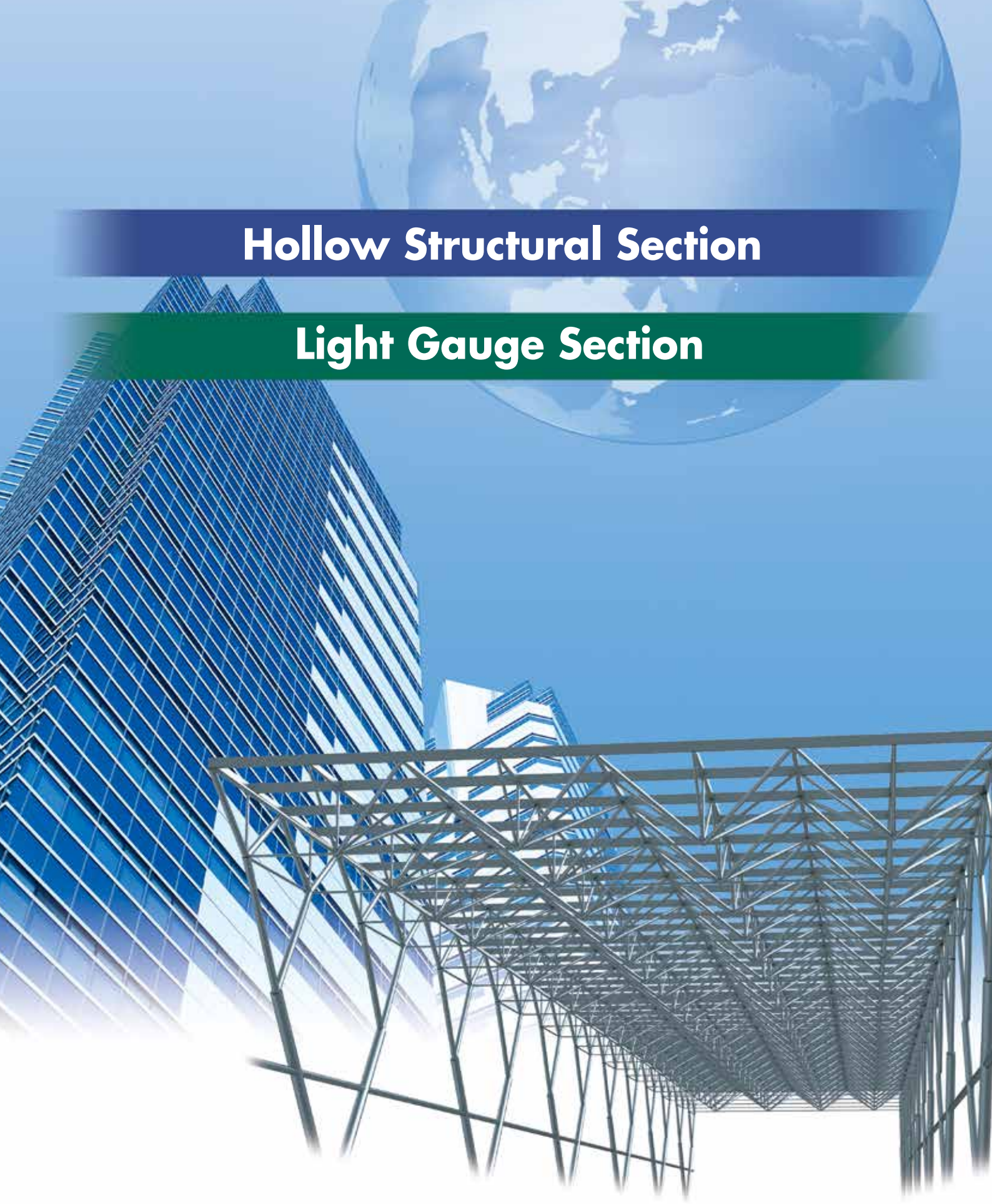
Hollow Structural Section

Light Gauge Section



NSMP

Nippon Steel & Sumikin Metal Products Co.,Ltd.

Introduction

Nippon Steel & Sumikin Metal Products Co.,Ltd., the core affiliate of Nippon Steel & Sumitomo Metal Corporation, produces various grades of Hollow Structural Section (HSS) in many international standards with the advanced "Cold Roll Forming Technology" based on long experience of almost 60 years and ceaseless R&D activities.
Our HSS is widely used in many fields such as Construction, Civil Engineering and Industrial & Construction Machineries and has attained reputation for its excellent quality and delivery from all over the world.

Standards

Various major international standards, such as ASTM, CSA, EN, AS/NZS, JIS, BCR and UBCR are available.

Sizes

Wide range of size is available including one of the largest cold roll formed HSS in the world.
Square size varies with each side from 50mm to 550mm or 2inch to 22inch.
wall thickness from 1.6mm to 25mm or 0.063inch to 0.984inch.

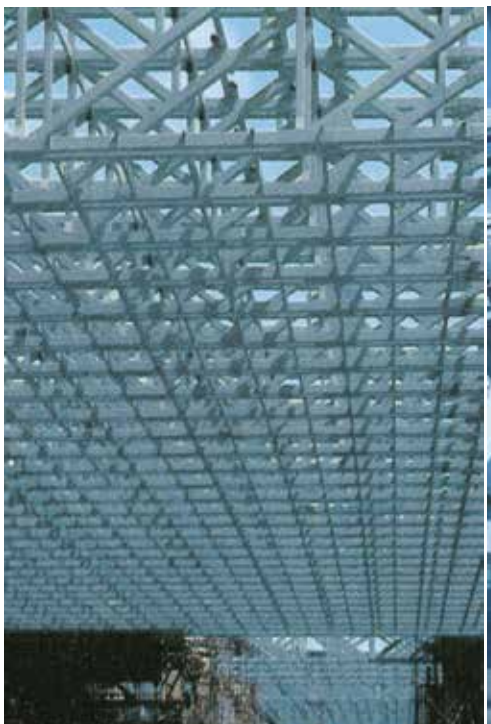
Quality

The highest and consistent quality is guaranteed such as high dimensional accuracy,
reliable welding quality and smooth surface.

Certified

ISO 9001(2004) : Quality Management System
ISO 14001(2004) : Environment Management System
SPC BC1(2008) : Singapore Factory Production Control Certificate
JIS G 3466 : Carbon Steel Square and Rectangular Tubes for General Structure
JIS G 3350 : Light Gauge Section for General Structure
BCR 295 : Building Column Specification approved by the Minister of Land, Infrastructure, Transport and Tourism, Japan
UBCR365 : Building Column Specification approved by the Minister of Land, Infrastructure, Transport and Tourism, Japan
ACRS : Australasian Standards Certification & Verification of Reinforcing, Prestressing & Structural Steels Compliance
FPC : Factory Production Control Certificates, Singapore

Contents

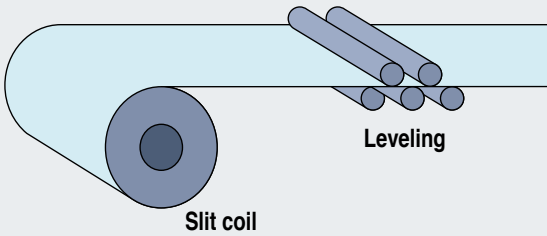


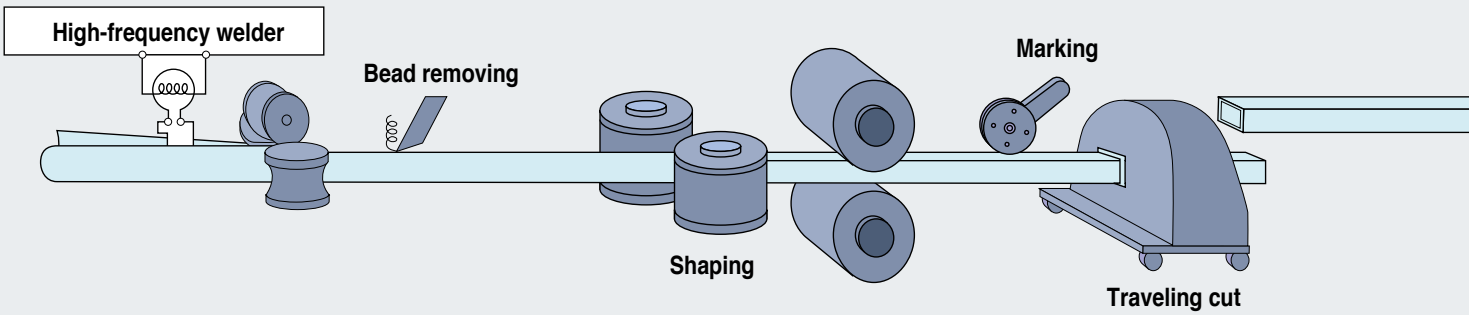
Application

Hollow Structural Section

Manufacturing process

Slit coil



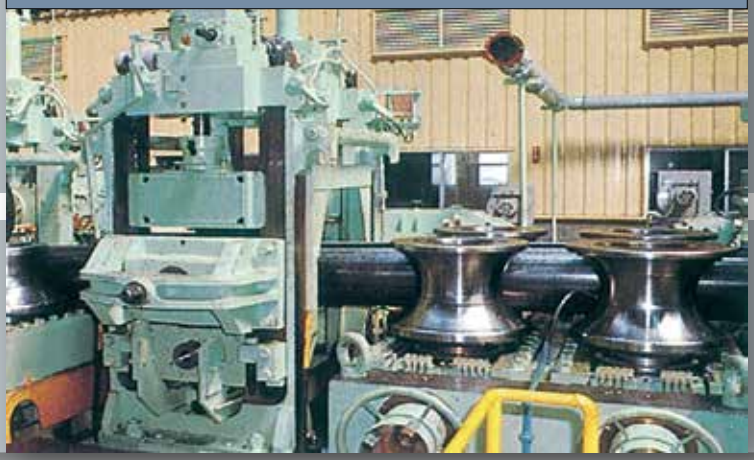


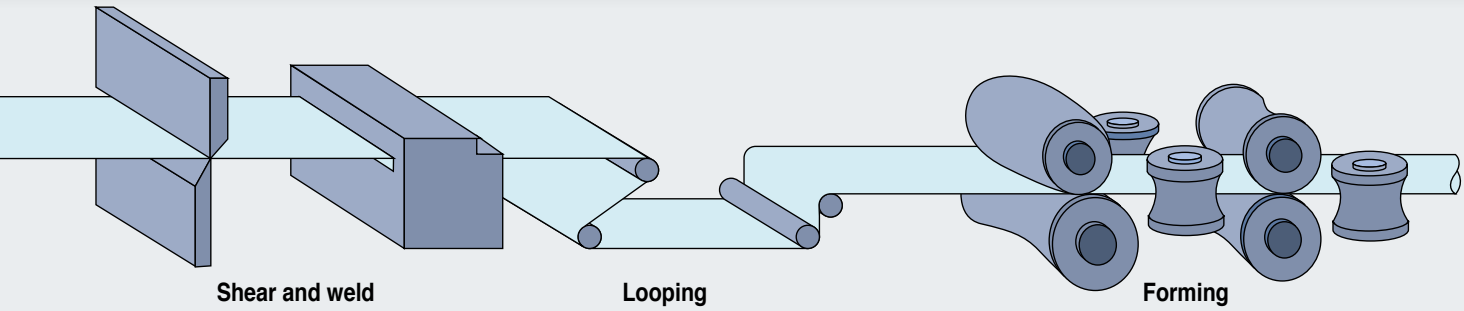
Welding

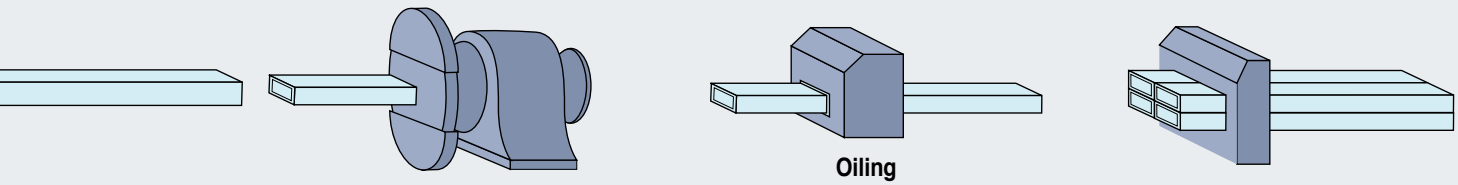
Shaping

Traveling cutter

Forming







Facing

Delivery

Specifications

Mechanical properties and chemical composition

Specification			page	Mechanical properties					
Standard	Grade	※ Availability		Yield strength (N/mm^2) Min or Min/Max	Tensile strength (N/mm^2) Min or Min/Max	Yield ratio (%) Max	Elongation [1] (%) Min	Charpy absorption energy (J) Min	
ASTM A500	B	○	9-14	315	400	-	23	-	
	C	○		345	425	-	21	-	
CSA G40.21-04	350W	○	15-18	350	450/620	-	22	-	
EN10219	S275J0H	○	19-26	T≦16 275 16＜T 265	T＜3 430/580 3≦T 410/560	-	20	27(0℃)	
	S275J2H	○						27(-20℃)	
	S355J0H	○		T≦16 355 16＜T 345	T＜3 510/680 3≦T 470/630	-	20	27(0℃)	
	S355J2H	○						27(-20℃)	
AS/NZS 1163	C350L0	○	27-34	350	430	-	B/T≦15 12 15<B/T≦30 14 30<B/T 16	27(0℃)	
	C450	○		450	500	-	B/T≦15 10 15<B/T≦30 12 30<B/T 14	-	
	C450L0	△						27(0℃)	
JIS G 3466	STKR400	○	35-42	245	400	-	23	-	
	STKR490	○		325	490	-	23	-	
Approved by MLIT of Japan [3]	BCR295	○	43-46	6≦T<12 295 12≦T≦22 295/445	400/550	12≦T 90	T=6 19, T=8,9 22, T=12 24, T=14,16 27, T=19 29, T=22 31, T=25 33	27(0℃)[4]	
	UBCR365	○	43-46	6≦T<12 365 12≦T<22 365/515	490/640	12≦T 90	T=6 19, T=8,9 22, T=12 24, T=14,16 27, T=19 29, T=22 31	27(0℃)[4]	

T : Wall thickness

Notes:

1)Test piece shall be in accordance with each standard.

2)EN 10219 : Cev = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
AS/NZS 1163 : Cev = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
BCR 295 : Ceq = C+Mn/6+Si/24+Ni/40+Cr/5+Mo/4+V/14

3)The Minister of Land, Infrastructure, Transport and Tourism of Japan.

4)It shall be applied to wall thickness over 12mm.

※ Availability :
○: Available
△: Please consult us. (Size and delivery date should be checked before ordering.)

Please consult us if you require other standards and additional requirements.

	Chemical composition						
	C (%) Max	Si (%) Max	Mn (%) Max	P (%) Max	S (%) Max	N (%) Max	Ceq or Cev [2] (%) Max
	0.26	-	1.35	0.035	0.035	-	-
	0.23	-	1.35	0.035	0.035	-	-
	0.23	0.40	0.50/1.50 (Min/Max)	0.040	0.050	-	-
	0.20	-	1.50	0.040	0.040	0.009	0.40
	0.20	-	1.50	0.035	0.035	-	0.40
	0.22	0.55	1.60	0.040	0.040	0.009	0.45
	0.22	0.55	1.60	0.035	0.035	-	0.45
	0.20	0.45	1.60	0.030	0.030	-	0.43
	0.20	0.45	1.70	0.030	0.030	-	0.43
	0.25	-	-	0.040	0.040	-	-
	0.18	0.55	1.50	0.040	0.040	-	-
	0.20	0.35	1.40	0.030	0.015	0.006	0.36
	0.18	0.55	1.60	0.030	0.015	0.006	0.44

ASTM A500

ASTM A500 “Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes”

Mechanical properties and chemical composition

Refer to page 7-8.

Tolerances

The tolerances on dimensions are established in accordance with ASTM A500

Characteristics	Tolerances	
Outside dimensions	(H,B≦2.5 in.)	±0.020 in. (0.5mm)
H : Longest side	(2.5 in.<H,B≦3.5 in.)	±0.025 in. (0.6mm)
B : Shortest side	(3.5 in.<H,B≦5.5 in.)	±0.030 in. (0.8mm)
	(5.5 in.<H,B)	1% in dimensions
Wall thickness(T)	±10% in thickness	
Squareness of sides	90°±2°	
External corner radius(R)	R≦3T	
Twist	(H≦1.5 in.)	±0.050 in./3 feet length (1.3mm/1m length)
	(1.5 in.<H≦2.5 in.)	±0.062 in./3 feet length (1.6mm/1m length)
	(2.5 in.<H≦4.0 in.)	±0.075 in./3 feet length (1.9mm/1m length)
	(4.0 in.<H≦6.0 in.)	±0.087 in./3 feet length (2.2mm/1m length)
	(6.0 in.<H≦8.0 in.)	±0.100 in./3 feet length (2.5mm/1m length)
	(8.0 in.<H)	±0.112 in./3 feet length (2.8mm/1m length)
Straightness	1/8 in./1 feet length (10.4mm/1m length)	
Length(L)	0, +50mm (Private standard tolerance)	

NOTE

1)The tolerance of outside dimensions includes an allowance for convexity or concavity.
2)Outside dimensions are measured across the flats at positions at least 2 in. from the end of the HSS.

Packing

In bare bundle (steel banded) or in bulk. Standard lengths are 40 and 48 feet.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.
a)Manufacturer's Name b)Standard & Grade c)Size d)Manufacturing Date e)Heat No. f)Country of Origin

Inspection and Testing

ASTM A500 is subject to specific inspection and testing. The test method shall be in accordance with ASTM A370, ASTM A751.

If you need additional requirements, please consult us.

Available size range

Dimensions (in.-size)

Size(in.)			Wall thickness(in.)								
			BWG#7	3/16	4/16	5/16	6/16	8/16	10/16	12/16	14/16
			0.180	0.188	0.250	0.313	0.375	0.500	0.625	0.750	0.875
SQUARE	RECTANGULAR	mm / mm	4.57	4.76	6.35	7.94	9.53	12.70	15.88	19.05	22.23
2.0 x 2.0		50.8 x 50.8									
2.5 x 2.5		63.5 x 63.5		●▲	●▲						
	3.0 x 2.0	76.2 x 50.8		●▲	●▲						
3.0 x 3.0		76.2 x 76.2	●▲	●▲	●▲	●	●				
	4.0 x 2.0	101.6 x 50.8	●▲	●▲	●▲						
3.5 x 3.5		88.9 x 88.9	●▲	●▲	●▲						
	4.0 x 3.0	101.6 x 76.2	●▲	●▲	●▲						
	5.0 x 2.0	127 x 50.8	●▲	●▲	●▲						
4.0 x 4.0		101.6 x 101.6	●▲	●▲	●▲	●▲	●▲	●			
	5.0 x 3.0	127 x 76.2	●▲	●▲	●▲	●▲	●▲				
	6.0 x 2.0	152.4 x 50.8	●▲	●▲	●▲						
4.5 x 4.5		114.3 x 114.3	●▲	●▲	●▲	●▲					
	6.0 x 3.0	152.4 x 76.2	●▲	●▲	●▲	●▲	●▲				
5.0 x 5.0		127 x 127	●▲	●▲	●▲	●▲	●▲	●▲			
	6.0 x 4.0	152.4 x 101.6	●▲	●▲	●▲	●▲	●▲	●			
6.0 x 6.0		152.4 x 152.4	●▲	●▲	●▲	●▲	●▲	●▲			
	7.0 x 5.0	177.8 x 127				●▲	●▲	●			
	8.0 x 4.0	203.2 x 101.6	●▲	●▲	●▲	●▲	●▲	●			
7.0 x 7.0		177.8 x 177.8	●▲	●▲	●▲	●▲	●▲	●▲			
	8.0 x 6.0	203.2 x 152.4	●▲	●▲	●▲	●▲	●▲	●▲			
	10 x 4.0	254 x 101.6				●▲	●▲				
8.0 x 8.0		203.2 x 203.2	●▲	●▲	●▲	●▲	●▲	●▲	●		
	10 x 6.0	254 x 152.4	●▲	●▲	●▲	●▲	●▲	●▲			
	12 x 4.0	304.8 x 101.6			●▲	●▲	●▲	●			
	10 x 8.0	254 x 203.2					●▲	●▲			
	12 x 6.0	304.8 x 152.4					●▲	●▲			
10 x 10		254 x 254			●▲	●▲	●▲	●▲	●▲	●	
	12 x 8.0	304.8 x 203.2			●▲	●▲	●▲	●▲			
	14 x 6.0	355.6 x 152.4				●▲	●▲	●▲			
12 x 12		304.8 x 304.8			●▲	●▲	●▲	●▲	●▲	●▲	
	14 x 10	355.6 x 254					●▲	●▲	●▲		
	16 x 8.0	406.4 x 203.2			●▲	●▲	●▲	●▲	●		
14 x 14		355.6 x 355.6				●▲	●▲	●▲	●▲	●▲	●▲
	16 x 12	406.4 x 304.8					●	●	●	●	
16 x 16		406.4 x 406.4				●	●▲	●▲	●▲	●▲	●▲
	20 x 12	508 x 304.8						●▲	●▲	●▲	
18 x 18		457.2 x 457.2						●▲	●▲	●▲	●▲
	24 x 12	609.6 x 304.8						●▲	●▲	●▲	
20 x 20		508 x 508						●▲	●▲	●▲	●▲
22 x 22		558.8 x 558.8								●▲	○

● Grade B Available ○ Grade B to be Confirmed
▲ Grade C Available

If you require other sizes, please consult us.

ASTM A500

Available size range

Dimensions (mm-size)

Size(mm)		Wall thickness (mm)																	
SQUARE	RECTANGULAR	1.6	2.0	2.3	2.5	3.0	3.2	4.0	4.5	5.0	6.0	6.3	8.0	9.0	10.0	12.0	12.5	16.0	19.0	22.0
	60 x 30	●▲	●▲	●▲	●▲	●▲	●▲	●	●											
50 x 50		●▲	●▲	●▲	●▲	●▲	●▲	●▲												
	60 x 40	●▲	●▲	●▲	●▲	●▲	●▲													
	70 x 40	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲											
60 x 60		●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
	75 x 45	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
	75 x 50			●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
	100 x 40	●▲	●▲	●▲	●▲	●▲	●▲	●	●											
75 x 75		●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●							
	100 x 50	●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
80 x 80		●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●							
	125 x 40	●▲	●▲	●▲	●▲	●▲	●▲													
90 x 90				●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲								
100 x 100		●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●				
	125 x 75	●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●	●						
	150 x 50			●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
	150 x 75					●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲						
	150 x 80					●▲	●▲	●▲	●▲	●▲	●▲									
120 x 120											●▲	●▲	●▲	●▲	●▲	●				
125 x 125				●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲				
	150 x 100			●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●				
150 x 150							●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲			
	175 x 125								●▲	●▲	●▲	●▲	●▲	●▲	●	●				
	200 x 100						●	●	●▲	●▲	●▲	●▲	●▲	●▲	●	●				
175 x 175									●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲				
	200 x 150								●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲				
	250 x 100								●	●	●▲	●▲	●▲	●▲	●	●				
200 x 200									●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●		
	225 x 175								●	●	●▲									
	250 x 150								●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲			
	300 x 100								●	●	●▲	●▲	●▲	●▲						
	250 x 200										●▲	●▲	●▲	●▲	●▲	●▲				
	300 x 150										●▲	●▲	●▲	●▲	●▲	●▲				
250 x 250											●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	
	300 x 200										●▲	●▲	●▲	●▲	●▲	●▲	●▲	●		
	350 x 150										●▲	●▲	●▲	●▲	●▲	●▲				
300 x 300											●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	
	350 x 250										●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲		
	400 x 200										●▲	●▲	●▲	●▲	●▲	●▲	●▲			
350 x 350														●▲	●▲	●▲	●▲	●▲	●▲	●▲
	400 x 300													●▲	●▲	●▲	●▲	●		
400 x 400														●▲	●▲	●▲	●▲	●▲	●▲	●▲
	500 x 300															●▲	●▲	●▲	●▲	
450 x 450														●	●	●▲	●▲	●▲	●▲	●▲
	600 x 300															●▲	●▲	●▲	●▲	
500 x 500														●	●	●▲	●▲	●▲	●▲	●
550 x 550																		●▲	●▲	●

● Grade B Available ▲ Grade C Available

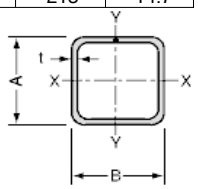
Section properties Square : 2 in. x 2 in. to 14 in. x 14 in.

Dimensions				Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size			Thickness													
A in.	x	B in.	t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A in.^{2}	Ix in.^{4}	Iy in.^{4}	ix in.	iy in.	Zx in.^{3}	Zy in.^{3}	Zpx in.^{3}	Zpy in.^{3}	ft
2	x	2	0.180	1.89	4.17	6.21	1.227	0.653	0.653	0.729	0.729	0.653	0.653	0.817	0.817	529
			0.188	1.96	4.31	6.42	1.269	0.668	0.668	0.726	0.726	0.668	0.668	0.841	0.841	510
			0.250	2.45	5.40	8.04	1.589	0.766	0.766	0.694	0.694	0.766	0.766	1.00	1.00	408
2.5	x	2.5	0.180	2.45	5.39	8.03	1.587	1.38	1.38	0.934	0.934	1.11	1.11	1.35	1.35	408
			0.188	2.53	5.58	8.32	1.644	1.42	1.42	0.930	0.930	1.14	1.14	1.40	1.40	395
			0.250	3.22	7.09	10.6	2.089	1.69	1.69	0.899	0.899	1.35	1.35	1.71	1.71	311
3	x	3	0.180	3.00	6.61	9.85	1.947	2.52	2.52	1.14	1.14	1.68	1.68	2.03	2.03	333
			0.188	3.11	6.86	10.2	2.019	2.60	2.60	1.13	1.13	1.73	1.73	2.10	2.10	322
			0.250	3.99	8.79	13.1	2.589	3.16	3.16	1.10	1.10	2.10	2.10	2.61	2.61	251
			0.313	4.79	10.6	15.7	3.108	3.58	3.58	1.07	1.07	2.39	2.39	3.04	3.04	209
			0.375	5.51	12.1	18.1	3.576	3.88	3.88	1.04	1.04	2.59	2.59	3.38	3.38	181
3.5	x	3.5	0.180	3.56	7.83	11.7	2.307	4.16	4.16	1.34	1.34	2.38	2.38	2.84	2.84	281
			0.188	3.69	8.13	12.1	2.394	4.29	4.29	1.34	1.34	2.45	2.45	2.93	2.93	271
			0.250	4.76	10.5	15.6	3.089	5.29	5.29	1.31	1.31	3.02	3.02	3.69	3.69	210
4	x	4	0.180	4.11	9.06	13.5	2.667	6.38	6.38	1.55	1.55	3.19	3.19	3.78	3.78	243
			0.188	4.27	9.40	14.0	2.769	6.59	6.59	1.54	1.54	3.30	3.30	3.91	3.91	234
			0.250	5.53	12.2	18.2	3.589	8.22	8.22	1.51	1.51	4.11	4.11	4.97	4.97	181
			0.313	6.72	14.8	22.0	4.358	9.58	9.58	1.48	1.48	4.79	4.79	5.90	5.90	149
			0.375	7.83	17.2	25.7	5.076	10.7	10.7	1.45	1.45	5.35	5.35	6.72	6.72	128
			0.500	9.80	21.6	32.2	6.356	12.3	12.3	1.39	1.39	6.13	6.13	8.02	8.02	102
4.5	x	4.5	0.180	4.67	10.3	15.3	3.027	9.28	9.28	1.75	1.75	4.13	4.13	4.86	4.86	214
			0.188	4.85	10.7	15.9	3.144	9.60	9.60	1.75	1.75	4.27	4.27	5.03	5.03	206
			0.250	6.31	13.9	20.7	4.089	12.1	12.1	1.72	1.72	5.36	5.36	6.43	6.43	158
			0.313	7.68	16.9	25.2	4.983	14.2	14.2	1.69	1.69	6.30	6.30	7.68	7.68	130
5	x	5	0.180	5.22	11.5	17.1	3.387	12.9	12.9	1.96	1.96	5.18	5.18	6.07	6.07	192
			0.188	5.43	11.9	17.8	3.519	13.4	13.4	1.95	1.95	5.36	5.36	6.29	6.29	184
			0.250	7.08	15.6	23.2	4.589	16.9	16.9	1.92	1.92	6.78	6.78	8.07	8.07	141
			0.313	8.65	19.0	28.4	5.608	20.1	20.1	1.89	1.89	8.02	8.02	9.71	9.71	116
			0.375	10.1	22.3	33.3	6.576	22.8	22.8	1.86	1.86	9.11	9.11	11.2	11.2	99.0
			0.500	12.9	28.4	42.3	8.356	27.0	27.0	1.80	1.80	10.8	10.8	13.7	13.7	77.5
6	x	6	0.180	6.33	13.9	20.8	4.107	22.9	22.9	2.36	2.36	7.65	7.65	8.90	8.90	158
			0.188	6.58	14.5	21.6	4.269	23.8	23.8	2.36	2.36	7.93	7.93	9.24	9.24	152
			0.250	8.62	19.0	28.3	5.589	30.3	30.3	2.33	2.33	10.1	10.1	11.9	11.9	116
			0.313	10.6	23.3	34.7	6.858	36.3	36.3	2.30	2.30	12.1	12.1	14.4	14.4	94.3
			0.375	12.5	27.4	40.9	8.076	41.6	41.6	2.27	2.27	13.9	13.9	16.8	16.8	80.0
			0.500	16.0	35.2	52.4	10.36	50.5	50.5	2.21	2.21	16.8	16.8	20.9	20.9	62.5
7	x	7	0.180	7.44	16.4	24.4	4.827	37.1	37.1	2.77	2.77	10.6	10.6	12.3	12.3	134
			0.188	7.74	17.0	25.4	5.019	38.5	38.5	2.77	2.77	11.0	11.0	12.7	12.7	129
			0.250	10.2	22.4	33.3	6.589	49.4	49.4	2.74	2.74	14.1	14.1	16.5	16.5	98.0
			0.313	12.5	27.5	41.0	8.108	59.5	59.5	2.71	2.71	17.0	17.0	20.1	20.1	80.0
			0.375	14.8	32.5	48.4	9.576	68.7	68.7	2.68	2.68	19.6	19.6	23.5	23.5	67.6
			0.500	19.1	42.0	62.5	12.36	84.6	84.6	2.62	2.62	24.2	24.2	29.6	29.6	52.4
8	x	8	0.180	8.55	18.8	28.1	5.547	56.1	56.1	3.18	3.18	14.0	14.0	16.2	16.2	117
			0.188	8.90	19.6	29.2	5.769	58.2	58.2	3.18	3.18	14.6	14.6	16.8	16.8	112
			0.250	11.7	25.8	38.4	7.589	75.1	75.1	3.15	3.15	18.8	18.8	21.9	21.9	85.5
			0.313	14.4	31.8	47.3	9.358	90.9	90.9	3.12	3.12	22.7	22.7	26.7	26.7	69.4
			0.375	17.1	37.6	56.0	11.08	106	106	3.09	3.09	26.4	26.4	31.3	31.3	58.5
			0.500	22.1	48.8	72.6	14.36	131	131	3.03	3.03	32.9	32.9	39.7	39.7	45.2
			0.625	26.9	59.2	88.2	17.43	153	153	2.96	2.96	38.3	38.3	47.2	47.2	37.2
10	x	10	0.250	14.8	32.6	48.5	9.589	151	151	3.96	3.96	30.1	30.1	34.9	34.9	67.6
			0.313	18.3	40.3	60.0	11.86	183	183	3.93	3.93	36.7	36.7	42.8	42.8	54.6
			0.375	21.7	47.8	71.2	14.08	214	214	3.90	3.90	42.9	42.9	50.4	50.4	46.1
			0.500	28.3	62.3	92.9	18.36	271	271	3.84	3.84	54.2	54.2	64.6	64.6	35.3
			0.625	34.6	76.2	113	22.43	321	321	3.78	3.78	64.2	64.2	77.6	77.6	28.9
			0.750	40.6	89.3	133	26.30	364	364	3.72	3.72	72.8	72.8	89.4	89.4	24.6
12	x	12	0.250	17.9	39.4	58.6	11.59	265	265	4.78	4.78	44.1	44.1	50.8	50.8	55.9
			0.313	22.1	48.8	72.6	14.36	324	324	4.75	4.75	54.0	54.0	62.6	62.6	45.2
			0.375	26.3	58.0	86.4	17.08	380	380	4.72	4.72	63.4	63.4	73.9	73.9	38.0
			0.500	34.5	75.9	113	22.36	485	485	4.66	4.66	80.9	80.9	95.4	95.4	29.0
			0.625	42.3	93.2	139	27.43	580	580	4.60	4.60	96.7	96.7	116	116	23.6
			0.750	49.8	110	163	32.30	665	665	4.54	4.54	111	111	134	134	20.1
14	x	14	0.313	26.0	57.2	85.3	16.86	522	522	5.57	5.57	74.6	74.6	86.1	86.1	38.5
			0.375	31.0	68.2	102	20.08	615	615	5.54	5.54	87.9	87.9	102	102	32.3
			0.500	40.6	89.5	133	26.36	791	791	5.48	5.48	113	113	132	132	24.6
			0.625	50.0	110	164	32.43	952	952	5.42	5.42	136	136	161	161	20.0
			0.750	59.1	130	194	38.30	1,100	1,100	5.36	5.36	157	157	188	188	16.9
			0.875	67.8	149	222	43.97	1,230	1,230	5.30	5.30	176	176	213	213	14.7

NOTE

1)The calculations of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
nominal	1.0T	2.0T



2)Refer to page 37-42 for the section properties of SI.

3)When designing based on the design manual of AISC, the calculation standard of the section performance will be different. You shall use the section properties based on the calculation standard on AISC.

ASTM A500

Section properties Square : 16 in. x 16 in. to 22 in. x 22 in.

Dimensions		Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size	Thickness													
A x B in.	t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A $in.^2$	Ix $in.^4$	Iy $in.^4$	ix in.	iy in.	Zx $in.^3$	Zy $in.^3$	Zpx $in.^3$	Zpy $in.^3$	ft
16 x 16	0.313	29.8	65.7	97.9	19.36	789	789	6.38	6.38	98.6	98.6	113	113	33.6
	0.375	35.6	78.4	117	23.08	931	931	6.35	6.35	116	116	134	134	28.1
	0.500	46.8	103	154	30.36	1,200	1,200	6.29	6.29	150	150	175	175	21.4
	0.625	57.7	127	189	37.43	1,450	1,450	6.23	6.23	182	182	214	214	17.3
	0.750	68.3	150	224	44.30	1,690	1,690	6.17	6.17	211	211	250	250	14.6
	0.875	78.6	173	258	50.97	1,900	1,900	6.11	6.11	238	238	285	285	12.7
18 x 18	0.500	53.0	117	174	34.36	1,740	1,740	7.11	7.11	193	193	224	224	18.9
	0.625	65.4	144	215	42.43	2,110	2,110	7.05	7.05	234	234	274	274	15.3
	0.750	77.6	171	254	50.30	2,460	2,460	6.99	6.99	273	273	322	322	12.9
	0.875	89.4	197	293	57.97	2,780	2,780	6.93	6.93	309	309	368	368	11.2
20 x 20	0.500	59.1	130	194	38.36	2,410	2,410	7.93	7.93	241	241	279	279	16.9
	0.625	73.1	161	240	47.43	2,940	2,940	7.87	7.87	294	294	342	342	13.7
	0.750	86.8	191	285	56.30	3,430	3,430	7.81	7.81	343	343	403	403	11.5
	0.875	100	221	329	64.97	3,900	3,900	7.75	7.75	390	390	461	461	10.0
22 x 22	0.750	96.1	212	315	62.30	4,630	4630	8.62	8.62	421	421	492	492	10.4
	0.875	111	244	364	71.97	5,280	5,280	8.56	8.56	480	480	565	565	9.01

Section properties Rectangular : 3 in. x 2 in. to 8 in. x 6 in.

Dimensions		Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size	Thickness													
A x B in.	t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A $in.^2$	Ix $in.^4$	Iy $in.^4$	ix in.	iy in.	Zx $in.^3$	Zy $in.^3$	Zpx $in.^3$	Zpy $in.^3$	ft
3 x 2	0.180	2.45	5.39	8.03	1.587	1.81	0.952	1.07	0.775	1.20	0.952	1.52	1.14	408
	0.188	2.53	5.58	8.32	1.644	1.86	0.977	1.06	0.771	1.24	0.977	1.57	1.18	395
	0.250	3.22	7.09	10.6	2.089	2.21	1.15	1.03	0.742	1.47	1.15	1.92	1.44	311
4 x 2	0.180	3.00	6.61	9.85	1.947	3.75	1.25	1.39	0.802	1.88	1.25	2.40	1.47	333
	0.188	3.11	6.86	10.2	2.019	3.87	1.29	1.38	0.798	1.93	1.29	2.48	1.52	322
	0.250	3.99	8.79	13.1	2.589	4.69	1.54	1.35	0.770	2.35	1.54	3.09	1.88	251
4 x 3	0.180	3.56	7.83	11.7	2.307	5.07	3.24	1.48	1.19	2.53	2.16	3.09	2.54	281
	0.188	3.69	8.13	12.1	2.394	5.23	3.34	1.48	1.18	2.62	2.23	3.20	2.62	271
	0.250	4.76	10.5	15.6	3.089	6.45	4.10	1.45	1.15	3.23	2.74	4.03	3.30	210
5 x 2	0.180	3.56	7.83	11.7	2.307	6.67	1.55	1.70	0.820	2.67	1.55	3.47	1.80	281
	0.188	3.69	8.13	12.1	2.394	6.89	1.60	1.70	0.816	2.75	1.60	3.59	1.86	271
	0.250	4.76	10.5	15.6	3.089	8.48	1.92	1.66	0.789	3.39	1.92	4.51	2.32	210
5 x 3	0.180	4.11	9.06	13.5	2.667	8.77	3.96	1.81	1.22	3.51	2.64	4.33	3.04	243
	0.188	4.27	9.40	14.0	2.769	9.06	4.08	1.81	1.21	3.62	2.72	4.49	3.15	234
	0.250	5.53	12.2	18.2	3.589	11.3	5.05	1.77	1.19	4.52	3.37	5.70	3.98	181
	0.313	6.72	14.8	22.0	4.358	13.2	5.85	1.74	1.16	5.27	3.90	6.77	4.72	149
	0.375	7.83	17.2	25.7	5.076	14.7	6.48	1.70	1.13	5.89	4.32	7.71	5.35	128
6 x 2	0.180	4.11	9.06	13.5	2.667	10.7	1.85	2.01	0.833	3.58	1.85	4.71	2.13	243
	0.188	4.27	9.40	14.0	2.769	11.1	1.90	2.00	0.829	3.70	1.90	4.88	2.20	234
	0.250	5.53	12.2	18.2	3.589	13.8	2.31	1.96	0.802	4.60	2.31	6.18	2.75	181
6 x 3	0.180	4.67	10.3	15.3	3.027	13.8	4.67	2.13	1.24	4.60	3.12	5.76	3.55	214
	0.188	4.85	10.7	15.9	3.144	14.3	4.83	2.13	1.24	4.76	3.22	5.97	3.68	206
	0.250	6.31	13.9	20.7	4.089	17.9	6.00	2.09	1.21	5.98	4.00	7.62	4.67	158
	0.313	7.68	16.9	25.2	4.983	21.1	6.98	2.06	1.18	7.03	4.65	9.11	5.56	130
	0.375	8.98	19.8	29.5	5.826	23.8	7.78	2.02	1.16	7.92	5.19	10.4	6.34	111
6 x 4	0.180	5.22	11.5	17.1	3.387	16.8	9.01	2.23	1.63	5.62	4.51	6.81	5.15	192
	0.188	5.43	11.9	17.8	3.519	17.4	9.32	2.23	1.63	5.81	4.66	7.06	5.34	184
	0.250	7.08	15.6	23.2	4.589	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	141
	0.313	8.65	19.0	28.4	5.608	26.2	13.8	2.16	1.57	8.72	6.92	10.9	8.21	116
	0.375	10.1	22.3	33.3	6.576	29.7	15.6	2.13	1.54	9.90	7.82	12.5	9.44	99.0
	0.500	12.9	28.4	42.3	8.356	35.3	18.4	2.06	1.48	11.8	9.21	15.4	11.5	77.5
7 x 5	0.313	10.6	23.3	34.7	6.858	45.5	26.9	2.60	1.98	13.0	10.8	15.9	12.6	94.3
	0.375	12.5	27.4	40.9	8.076	52.2	30.8	2.54	1.95	14.9	12.3	18.5	14.6	80.0
	0.500	16.0	35.2	52.4	10.36	63.5	37.2	2.48	1.90	18.1	14.9	23.1	18.2	62.5
8 x 4	0.180	6.33	13.9	20.8	4.107	34.1	11.6	2.88	1.68	8.52	5.82	10.6	6.53	158
	0.188	6.58	14.5	21.6	4.269	35.3	12.0	2.88	1.68	8.83	6.02	11.0	6.77	152
	0.250	8.62	19.0	28.3	5.589	45.1	15.3	2.84	1.65	11.3	7.63	14.1	8.72	116
	0.313	10.6	23.3	34.7	6.858	53.9	18.1	2.80	1.62	13.5	9.05	17.1	10.5	94.3
	0.375	12.5	27.4	40.9	8.076	61.9	20.6	2.77	1.60	15.5	10.3	19.9	12.2	80.0
	0.500	16.0	35.2	52.4	10.36	75.1	24.6	2.69	1.54	18.8	12.3	24.7	15.0	62.5
8 x 6	0.180	7.44	16.4	24.4	4.827	45.1	29.0	3.06	2.45	11.3	9.68	13.4	11.0	134
	0.188	7.74	17.0	25.4	5.019	46.8	30.1	3.05	2.45	11.7	10.0	13.9	11.4	129
	0.250	10.2	22.4	33.3	6.589	60.1	38.6	3.02	2.42	15.0	12.9	18.0	14.8	98.0
	0.313	12.5	27.5	41.0	8.108	72.4	46.4	2.99	2.39	18.1	15.5	21.9	18.0	80.0
	0.375	14.8	32.5	48.4	9.576	83.7	53.5	2.96	2.36	20.9	17.8	25.6	21.0	67.6
	0.500	19.1	42.0	62.5	12.36	103	65.7	2.89	2.31	25.8	21.9	32.2	26.4	52.4

Section properties Rectangular : 10 in. x 4 in. to 24 in. x 12 in.

Dimensions				Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size			Thickness													
A in.	x	B in.	t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A $in.^2$	Ix $in.^4$	Iy $in.^4$	ix in.	iy in.	Zx $in.^3$	Zy $in.^3$	Zpx $in.^3$	Zpy $in.^3$	ft
10	x	4	0.313	12.5	27.5	41.0	8.108	95.5	22.4	3.43	1.66	19.1	11.2	24.6	12.8	80.0
			0.375	14.8	32.5	48.4	9.576	110	25.5	3.39	1.63	22.0	12.8	28.7	14.9	67.6
			0.500	19.1	42.0	62.5	12.36	136	30.8	3.31	1.58	27.1	15.4	36.1	18.5	52.4
10	x	6	0.180	8.55	18.8	28.1	5.547	76.9	35.1	3.72	2.52	15.4	11.7	18.6	13.1	117
			0.188	8.90	19.6	29.2	5.769	79.8	36.5	3.72	2.51	16.0	12.2	19.3	13.6	112
			0.250	11.7	25.8	38.4	7.589	103	46.9	3.69	2.49	20.6	15.6	25.1	17.7	85.5
			0.313	14.4	31.8	47.3	9.358	125	56.5	3.65	2.46	25.0	18.8	30.7	21.5	69.4
			0.375	17.1	37.6	56.0	11.08	145	65.4	3.62	2.43	29.0	21.8	35.9	25.2	58.5
			0.500	22.1	48.8	72.6	14.36	181	80.8	3.55	2.37	36.2	26.9	45.6	31.9	45.2
12	x	4	0.250	11.7	25.8	38.4	7.589	127	22.3	4.09	1.71	21.1	11.1	27.3	12.5	85.5
			0.313	14.4	31.8	47.3	9.372	153	26.6	4.05	1.69	25.6	13.3	33.4	15.1	69.4
			0.375	17.1	37.6	56.0	11.08	178	30.5	4.01	1.66	29.6	15.2	39.0	17.6	58.5
			0.500	22.1	48.8	72.6	14.36	221	36.9	3.92	1.60	36.8	18.5	49.4	22.0	45.2
10	x	8	0.375	19.4	42.7	63.6	12.58	180	127	3.78	3.18	35.9	31.8	43.1	37.0	51.5
			0.500	25.2	55.5	82.7	16.36	226	160	3.72	3.12	45.2	39.9	55.1	47.2	39.7
12	x	6	0.375	19.4	42.7	63.6	12.58	228	77.2	4.26	2.48	38.1	25.7	47.7	29.4	51.5
			0.500	25.2	55.5	82.7	16.36	287	96.0	4.19	2.42	47.8	32.0	60.9	37.4	39.7
12	x	8	0.250	14.8	32.6	48.5	9.589	196	105	4.52	3.31	32.6	26.3	39.1	29.6	67.6
			0.313	18.3	40.3	60.0	11.86	239	128	4.49	3.28	39.8	32.0	47.9	36.3	54.6
			0.375	21.7	47.8	71.2	14.08	279	149	4.45	3.26	46.5	37.3	56.5	42.7	46.1
			0.500	28.3	62.3	92.9	18.36	353	188	4.39	3.20	58.9	46.9	72.4	54.7	35.3
14	x	6	0.313	18.3	40.3	60.0	11.86	288	76.7	4.93	2.54	41.2	25.6	51.9	28.7	54.6
			0.375	21.7	47.8	71.2	14.08	337	89.1	4.89	2.52	48.1	29.7	61.1	33.6	46.1
			0.500	28.3	62.3	92.9	18.36	426	111	4.82	2.46	60.8	37.1	78.3	42.9	35.3
14	x	10	0.375	26.3	58.0	86.4	17.08	476	284	5.28	4.08	68.0	56.8	81.5	64.8	38.0
			0.500	34.5	75.9	113	22.36	608	361	5.22	4.02	86.9	72.3	105	83.6	29.0
			0.625	42.3	93.2	139	27.43	728	431	5.15	3.96	104	86.2	127	101	23.6
16	x	8	0.250	17.9	39.4	58.6	11.59	393	135	5.82	3.42	49.1	33.8	60.3	37.4	55.9
			0.313	22.1	48.8	72.6	14.36	481	165	5.79	3.39	60.1	41.2	74.2	45.9	45.2
			0.375	26.3	58.0	86.4	17.08	565	193	5.75	3.36	70.6	48.2	87.6	54.2	38.0
			0.500	34.5	75.9	113	22.36	722	244	5.68	3.30	90.2	61.0	113	69.7	29.0
			0.625	42.3	93.2	139	27.43	863	290	5.61	3.25	108	72.4	137	84.1	23.6
16	x	12	0.375	31.0	68.2	102	20.08	748	482	6.11	4.90	93.5	80.3	111	91.3	32.3
			0.500	40.6	89.5	133	26.36	962	618	6.04	4.84	120	103	144	118	24.6
			0.625	50.0	110	164	32.43	1,160	742	5.98	4.78	145	124	175	144	20.0
			0.750	59.1	130	194	38.30	1,340	856	5.91	4.73	167	143	205	168	16.9
20	x	12	0.500	46.8	103	154	30.36	1,650	750	7.37	4.97	165	125	201	141	21.4
			0.625	57.7	127	189	37.43	2,000	904	7.30	4.91	200	151	245	172	17.3
			0.750	68.3	150	224	44.30	2,320	1,050	7.24	4.86	232	174	287	202	14.6
24	x	12	0.500	53.0	117	174	34.36	2,580	882	8.67	5.07	215	147	266	164	18.9
			0.625	65.4	144	215	42.43	3,130	1,070	8.59	5.01	261	178	325	201	15.3
			0.750	77.6	171	254	50.30	3,650	1,240	8.52	4.96	304	206	382	235	12.9

CSA G40.21-04

CSA G40.21-04 “General requirements for rolled or weld structural quality steel/structural quality steel”

Mechanical properties and chemical composition

Refer to page 7-8.

Tolerances

The tolerances on dimensions are established in accordance with CSA G40.21-04.

Characteristics	Tolerances		
Outside dimensions of side	(H≦2.5 in.)	± 0.02 in.	
H : Longest side	(2.5 in.＜H≦3.5 in.)	± 0.03 in.	
B : Shortest side	(3.5 in.＜H≦5.5 in.)	± 0.04 in.	
	(5.5 in.＜H)	± 1%	
Wall thickness(T)	−5%,+10%		
Squareness of sides	90˚± 1.0˚		
External corner radius		(perimeter ≦24 in.)	(24 in.＜perimeter)
	(T≦0.109 in.)	0.218 in.	—
	(0.109 in.＜T≦0.134 in.)	0.268 in.	—
	(0.134 in.＜T≦0.156 in.)	0.312 in.	—
	(0.156 in.＜T≦0.188 in.)	0.470 in.	—
	(0.188 in.＜T≦0.250 in.)	0.625 in.	0.750 in.
	(0.250 in.＜T≦0.313 in.)	0.785 in.	0.940 in.
	(0.313 in.＜T≦0.375 in.)	0.938 in.	1.125 in.
	(0.375 in.＜T≦0.500 in.)	1.250 in.	1.500 in.
	(0.500 in.＜T)	—	3 x T
Straightness	1/8 in./1 feet length (10.4mm/1m length)		
Twist	(H≦1.5 in.)	0.050 in.	
	(1.5 in.＜H≦2.5 in.)	0.062 in.	
	(2.5 in.＜H≦4 in.)	0.075 in.	
	(4 in.＜H≦6 in.)	0.087 in.	
	(6 in.＜H≦8 in.)	0.100 in.	
	(8 in.＜H)	0.112 in.	
Weight	-3.5%,+10%		
Length(L)	(L≦24 in.)	-0.25 in. and +0.5 in.	
	(24 in.＜L)	-0.25 in. and +0.75 in.	

NOTE

1) Outside dimensions are measured across the flats at positions at least 50mm from the end of the HSS.

Packing

In bare bundle (steel banded) or in bulk. Standard lengths are 20, 24, 40 and 48 feet.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.

a)Manufacturer's Name b)Standard & Grade c)Size d)Manufacturing Date e)Heat No. f)Country of Origin

Inspection and Testing

CSA is subject to tensile testing and impact test in accordance with CSA G40.21-04.

Available size range

Dimensions (in.-size)

Size(in.)			Wall thickness(in.)								
			BWG#7	3/16	4/16	5/16	6/16	8/16	10/16	12/16	14/16
			0.180	0.188	0.250	0.313	0.375	0.500	0.625	0.750	0.875
SQUARE	RECTANGULAR	mm / mm	4.57	4.76	6.35	7.94	9.53	12.70	15.88	19.05	22.23
2.0 x 2.0		50.8 x 50.8									
2.5 x 2.5		63.5 x 63.5		●	●						
	3.0 x 2.0	76.2 x 50.8		●	●						
3.0 x 3.0		76.2 x 76.2	●	●	●						
	4.0 x 2.0	101.6 x 50.8	●	●	●						
3.5 x 3.5		88.9 x 88.9	●	●	●						
	4.0 x 3.0	101.6 x 76.2	●	●	●						
	5.0 x 2.0	127 x 50.8	●	●	●						
4.0 x 4.0		101.6 x 101.6	●	●	●		●				
	5.0 x 3.0	127 x 76.2	●	●	●						
	6.0 x 2.0	152.4 x 50.8	●	●	●						
4.5 x 4.5		114.3 x 114.3	●	●	●						
	6.0 x 3.0	152.4 x 76.2	●	●	●		●				
5.0 x 5.0		127 x 127	●	●	●		●				
	6.0 x 4.0	152.4 x 101.6	●	●	●		●				
6.0 x 6.0		152.4 x 152.4	●	●	●		●				
	8.0 x 4.0	203.2 x 101.6	●	●	●		●				
7.0 x 7.0		177.8 x 177.8	●	●	●	●	●	●			
	8.0 x 6.0	203.2 x 152.4	●	●	●	●	●	●			
8.0 x 8.0		203.2 x 203.2	●	●	●	●	●	●			
	10 x 6.0	254 x 152.4	●	●	●	●	●	●			
	12 x 4.0	304.8 x 101.6			●	●	●				
	10 x 8.0	254 x 203.2					●	●			
	12 x 6.0	304.8 x 152.4					●	●			
10 x 10		254 x 254			●	●	●	●	●		
	12 x 8.0	304.8 x 203.2			●	●	●	●			
	14 x 6.0	355.6 x 152.4				●	●	●			
12 x 12		304.8 x 304.8			●	●	●	●	●	●	
	14 x 10	355.6 x 254					●	●	●		
	16 x 8.0	406.4 x 203.2			●	●	●	●			
14 x 14		355.6 x 355.6				●	●	●	●	●	●
16 x 12		406.4 x 304.8					●	●	●		
16 x 16		406.4 x 406.4					●	●	●	●	●
	20 x 12	508 x 304.8						●	●	●	
18 x 18		457.2 x 457.2						●	●	●	●
	24 x 12	609.6 x 304.8						●	●	●	
20 x 20		508 x 508						●	●	●	●
22 x 22		558.8 x 558.8								●	

● 350W Available

If you require other sizes, please contact us.

CSA G40.21-04

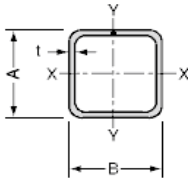
Section properties Square : 2 in. x 2 in. to 22 in. x 22 in.

Dimensions			Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size		Thickness													
A x B in.		t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A in.^{2}	Ix in.^{4}	Iy in.^{4}	ix in.	iy in.	Zx in.^{3}	Zy in.^{3}	Zpx in.^{3}	Zpy in.^{3}	ft
2	x 2	0.180	1.89	4.17	6.21	1.227	0.653	0.653	0.729	0.729	0.653	0.653	0.817	0.817	529
		0.188	1.96	4.31	6.42	1.269	0.668	0.668	0.726	0.726	0.668	0.668	0.841	0.841	510
		0.250	2.45	5.40	8.04	1.589	0.766	0.766	0.694	0.694	0.766	0.766	1.00	1.00	408
3	x 3	0.180	3.00	6.61	9.85	1.947	2.52	2.52	1.14	1.14	1.68	1.68	2.03	2.03	333
		0.188	3.11	6.86	10.2	2.019	2.60	2.60	1.13	1.13	1.73	1.73	2.10	2.10	322
		0.250	3.99	8.79	13.1	2.589	3.16	3.16	1.10	1.10	2.10	2.10	2.61	2.61	251
3.5	x 3.5	0.180	3.56	7.83	11.7	2.307	4.16	4.16	1.34	1.34	2.38	2.38	2.84	2.84	281
		0.188	3.69	8.13	12.1	2.394	4.29	4.29	1.34	1.34	2.45	2.45	2.93	2.93	271
		0.250	4.76	10.5	15.6	3.089	5.29	5.29	1.31	1.31	3.02	3.02	3.69	3.69	210
4	x 4	0.180	4.11	9.06	13.5	2.667	6.38	6.38	1.55	1.55	3.19	3.19	3.78	3.78	243
		0.188	4.27	9.40	14.0	2.769	6.59	6.59	1.54	1.54	3.30	3.30	3.91	3.91	234
		0.250	5.53	12.2	18.2	3.589	8.22	8.22	1.51	1.51	4.11	4.11	4.97	4.97	181
		0.375	7.83	17.2	25.7	5.076	10.7	10.7	1.45	1.45	5.35	5.35	6.72	6.72	128
4.5	x 4.5	0.180	4.67	10.3	15.3	3.027	9.28	9.28	1.75	1.75	4.13	4.13	4.86	4.86	214
		0.188	4.85	10.7	15.9	3.144	9.60	9.60	1.75	1.75	4.27	4.27	5.03	5.03	206
		0.250	6.31	13.9	20.7	4.089	12.1	12.1	1.72	1.72	5.36	5.36	6.43	6.43	158
5	x 5	0.180	5.22	11.5	17.1	3.387	12.9	12.9	1.96	1.96	5.18	5.18	6.07	6.07	192
		0.188	5.43	11.9	17.8	3.519	13.4	13.4	1.95	1.95	5.36	5.36	6.29	6.29	184
		0.250	7.08	15.6	23.2	4.589	16.9	16.9	1.92	1.92	6.78	6.78	8.07	8.07	141
		0.375	10.1	22.3	33.3	6.576	22.8	22.8	1.86	1.86	9.11	9.11	11.2	11.2	99.0
		0.500	12.9	28.4	42.3	8.356	27.0	27.0	1.80	1.80	10.8	10.8	13.7	13.7	77.5
6	x 6	0.180	6.33	13.9	20.8	4.107	22.9	22.9	2.36	2.36	7.65	7.65	8.90	8.90	158
		0.188	6.58	14.5	21.6	4.269	23.8	23.8	2.36	2.36	7.93	7.93	9.24	9.24	152
		0.250	8.62	19.0	28.3	5.589	30.3	30.3	2.33	2.33	10.1	10.1	11.9	11.9	116
		0.375	12.5	27.4	40.9	8.076	41.6	41.6	2.27	2.27	13.9	13.9	16.8	16.8	80.0
		0.500	16.0	35.2	52.4	10.36	50.5	50.5	2.21	2.21	16.8	16.8	20.9	20.9	62.5
7	x 7	0.180	7.44	16.4	24.4	4.827	37.1	37.1	2.77	2.77	10.6	10.6	12.3	12.3	134
		0.188	7.74	17.0	25.4	5.019	38.5	38.5	2.77	2.77	11.0	11.0	12.7	12.7	129
		0.250	10.2	22.4	33.3	6.589	49.4	49.4	2.74	2.74	14.1	14.1	16.5	16.5	98.0
		0.313	12.5	27.5	41.0	8.108	59.5	59.5	2.71	2.71	17.0	17.0	20.1	20.1	80.0
		0.375	14.8	32.5	48.4	9.576	68.7	68.7	2.68	2.68	19.6	19.6	23.5	23.5	67.6
		0.500	19.1	42.0	62.5	12.36	84.6	84.6	2.62	2.62	24.2	24.2	29.6	29.6	52.4
8	x 8	0.180	8.55	18.8	28.1	5.547	56.1	56.1	3.18	3.18	14.0	14.0	16.2	16.2	117
		0.188	8.90	19.6	29.2	5.769	58.2	58.2	3.18	3.18	14.6	14.6	16.8	16.8	112
		0.250	11.7	25.8	38.4	7.589	75.1	75.1	3.15	3.15	18.8	18.8	21.9	21.9	85.5
		0.313	14.4	31.8	47.3	9.358	90.9	90.9	3.12	3.12	22.7	22.7	26.7	26.7	69.4
		0.375	17.1	37.6	56.0	11.08	106	106	3.09	3.09	26.4	26.4	31.3	31.3	58.5
		0.500	22.1	48.8	72.6	14.36	131	131	3.03	3.03	32.9	32.9	39.7	39.7	45.2
10	x 10	0.250	14.8	32.6	48.5	9.589	151	151	3.96	3.96	30.1	30.1	34.9	34.9	67.6
		0.313	18.3	40.3	60.0	11.86	183	183	3.93	3.93	36.7	36.7	42.8	42.8	54.6
		0.375	21.7	47.8	71.2	14.08	214	214	3.90	3.90	42.9	42.9	50.4	50.4	46.1
		0.500	28.3	62.3	92.9	18.36	271	271	3.84	3.84	54.2	54.2	64.6	64.6	35.3
		0.625	34.6	76.2	113	22.43	321	321	3.78	3.78	64.2	64.2	77.6	77.6	28.9
12	x 12	0.250	17.9	39.4	58.6	11.59	265	265	4.78	4.78	44.1	44.1	50.8	50.8	55.9
		0.313	22.1	48.8	72.6	14.36	324	324	4.75	4.75	54.0	54.0	62.6	62.6	45.2
		0.375	26.3	58.0	86.4	17.08	380	380	4.72	4.72	63.4	63.4	73.9	73.9	38.0
		0.500	34.5	75.9	113	22.36	485	485	4.66	4.66	80.9	80.9	95.4	95.4	29.0
		0.625	42.3	93.2	139	27.43	580	580	4.60	4.60	96.7	96.7	116	116	23.6
		0.750	49.8	110	163	32.30	665	665	4.54	4.54	111	111	134	134	20.1
14	x 14	0.313	26.0	57.2	85.3	16.86	522	522	5.57	5.57	74.6	74.6	86.1	86.1	38.5
		0.375	31.0	68.2	102	20.08	615	615	5.54	5.54	87.9	87.9	102	102	32.3
		0.500	40.6	89.5	133	26.36	791	791	5.48	5.48	113	113	132	132	24.6
		0.625	50.0	110	164	32.43	952	952	5.42	5.42	136	136	161	161	20.0
		0.750	59.1	130	194	38.30	1,100	1,100	5.36	5.36	157	157	188	188	16.9
		0.875	67.8	149	222	43.97	1,230	1,230	5.30	5.30	176	176	213	213	14.7
16	x 16	0.375	35.6	78.4	117	23.08	931	931	6.35	6.35	116	116	134	134	28.1
		0.500	46.8	103	154	30.36	1,200	1,200	6.29	6.29	150	150	175	175	21.4
		0.625	57.7	127	189	37.43	1,450	1,450	6.23	6.23	182	182	214	214	17.3
		0.750	68.3	150	224	44.30	1,690	1,690	6.17	6.17	211	211	250	250	14.6
		0.875	78.6	173	258	50.97	1,900	1,900	6.11	6.11	238	238	285	285	12.7
18	x 18	0.500	53.0	117	174	34.36	1,740	1,740	7.11	7.11	193	193	224	224	18.9
		0.625	65.4	144	215	42.43	2,110	2,110	7.05	7.05	234	234	274	274	15.3
		0.750	77.6	171	254	50.30	2,460	2,460	6.99	6.99	273	273	322	322	12.9
		0.875	89.4	197	293	57.97	2,780	2,780	6.93	6.93	309	309	368	368	11.2
20	x 20	0.500	59.1	130	194	38.36	2,410	2,410	7.93	7.93	241	241	279	279	16.9
		0.625	73.1	161	240	47.43	2,940	2,940	7.87	7.87	294	294	342	342	13.7
		0.750	86.8	191	285	56.30	3,430	3,430	7.81	7.81	343	343	403	403	11.5
		0.875	100	221	329	64.97	3,900	3,900	7.75	7.75	390	390	461	461	10.0
22	x 22	0.750	96.1	212	315	62.30	4,630	4,630	8.62	8.62	421	421	492	492	10.4

NOTE

The calculation of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
nominal	1.0T	2.0T



Section properties Rectangular : 3 in. x 2 in. to 24 in. x 12 in.

Dimensions				Mass			Area	Second moment of area		Radius of gyration		Elastic section modulus		Plastic section modulus		Nominal length per tonne
Nominal size			Thickness													
A in.	x	B in.	t in.	M1 kg/ft	M2 lb/ft	M3 kg/m	A $in.^2$	Ix $in.^4$	Iy $in.^4$	ix in.	iy in.	Zx $in.^3$	Zy $in.^3$	Zpx $in.^3$	Zpy $in.^3$	ft
3	x	2	0.180	2.45	5.39	8.03	1.587	1.81	0.952	1.07	0.775	1.20	0.952	1.52	1.14	408
			0.188	2.53	5.58	8.32	1.644	1.86	0.977	1.06	0.771	1.24	0.977	1.57	1.18	395
			0.250	3.22	7.09	10.6	2.089	2.21	1.15	1.03	0.742	1.47	1.15	1.92	1.44	311
4	x	2	0.180	3.00	6.61	9.85	1.947	3.75	1.25	1.39	0.802	1.88	1.25	2.40	1.47	333
			0.188	3.11	6.86	10.2	2.019	3.87	1.29	1.38	0.798	1.93	1.29	2.48	1.52	322
			0.250	3.99	8.79	13.1	2.589	4.69	1.54	1.35	0.770	2.35	1.54	3.09	1.88	251
4	x	3	0.180	3.56	7.83	11.7	2.307	5.07	3.24	1.48	1.19	2.53	2.16	3.09	2.54	281
			0.188	3.69	8.13	12.1	2.394	5.23	3.34	1.48	1.18	2.62	2.23	3.20	2.62	271
			0.250	4.76	10.5	15.6	3.089	6.45	4.10	1.45	1.15	3.23	2.74	4.03	3.30	210
5	x	2	0.180	3.56	7.83	11.7	2.307	6.67	1.55	1.70	0.820	2.67	1.55	3.47	1.80	281
			0.188	3.69	8.13	12.1	2.394	6.89	1.60	1.70	0.816	2.75	1.60	3.59	1.86	271
			0.250	4.76	10.5	15.6	3.089	8.48	1.92	1.66	0.789	3.39	1.92	4.51	2.32	210
5	x	3	0.180	4.11	9.06	13.5	2.667	8.77	3.96	1.81	1.22	3.51	2.64	4.33	3.04	243
			0.188	4.27	9.40	14.0	2.769	9.06	4.08	1.81	1.21	3.62	2.72	4.49	3.15	234
			0.250	5.53	12.2	18.2	3.589	11.3	5.05	1.77	1.19	4.52	3.37	5.70	3.98	181
			0.375	7.83	17.2	25.7	5.076	14.7	6.48	1.70	1.13	5.89	4.32	7.71	5.35	128
6	x	2	0.180	4.11	9.06	13.5	2.667	10.7	1.85	2.01	0.833	3.58	1.85	4.71	2.13	243
			0.188	4.27	9.40	14.0	2.769	11.1	1.90	2.00	0.829	3.70	1.90	4.88	2.20	234
			0.250	5.53	12.2	18.2	3.589	13.8	2.31	1.96	0.802	4.60	2.31	6.18	2.75	181
6	x	3	0.180	4.67	10.3	15.3	3.027	13.8	4.67	2.13	1.24	4.60	3.12	5.76	3.55	214
			0.188	4.85	10.7	15.9	3.144	14.3	4.83	2.13	1.24	4.76	3.22	5.97	3.68	206
			0.250	6.31	13.9	20.7	4.089	17.9	6.00	2.09	1.21	5.98	4.00	7.62	4.67	158
			0.375	8.98	19.8	29.5	5.826	23.8	7.78	2.02	1.16	7.92	5.19	10.4	6.34	111
6	x	4	0.180	5.22	11.5	17.1	3.387	16.8	9.01	2.23	1.63	5.62	4.51	6.81	5.15	192
			0.188	5.43	11.9	17.8	3.519	17.4	9.32	2.23	1.63	5.81	4.66	7.06	5.34	184
			0.250	7.08	15.6	23.2	4.589	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	141
			0.375	10.1	22.3	33.3	6.576	29.7	15.6	2.13	1.54	9.90	7.82	12.5	9.44	99.0
7	x	5	0.375	12.5	27.4	40.9	8.076	52.2	30.8	2.54	1.95	14.9	12.3	18.5	14.6	80.0
8	x	4	0.180	6.33	13.9	20.8	4.107	34.1	11.6	2.88	1.68	8.52	5.82	10.6	6.53	158
			0.188	6.58	14.5	21.6	4.269	35.3	12.0	2.88	1.68	8.83	6.02	11.0	6.77	152
			0.250	8.62	19.0	28.3	5.589	45.1	15.3	2.84	1.65	11.3	7.63	14.1	8.72	116
			0.375	12.5	27.4	40.9	8.076	61.9	20.6	2.77	1.60	15.5	10.3	19.9	12.2	80.0
8	x	6	0.180	7.44	16.4	24.4	4.827	45.1	29.0	3.06	2.45	11.3	9.68	13.4	11.0	134
			0.188	7.74	17.0	25.4	5.019	46.8	30.1	3.05	2.45	11.7	10.0	13.9	11.4	129
			0.250	10.2	22.4	33.3	6.589	60.1	38.6	3.02	2.42	15.0	12.9	18.0	14.8	98.0
			0.313	12.5	27.5	41.0	8.108	72.4	46.4	2.99	2.39	18.1	15.5	21.9	18.0	80.0
			0.375	14.8	32.5	48.4	9.576	83.7	53.5	2.96	2.36	20.9	17.8	25.6	21.0	67.6
			0.500	19.1	42.0	62.5	12.36	103	65.7	2.89	2.31	25.8	21.9	32.2	26.4	52.4
10	x	4	0.313	12.5	27.5	41.0	8.108	95.5	22.4	3.43	1.66	19.1	11.2	24.6	12.8	80.0
			0.375	14.8	32.5	48.4	9.576	110	25.5	3.39	1.63	22.0	12.8	28.7	14.9	67.6
10	x	6	0.180	8.55	18.8	28.1	5.547	76.9	35.1	3.72	2.52	15.4	11.7	18.6	13.1	117
			0.188	8.90	19.6	29.2	5.769	79.8	36.5	3.72	2.51	16.0	12.2	19.3	13.6	112
			0.250	11.7	25.8	38.4	7.589	103	46.9	3.69	2.49	20.6	15.6	25.1	17.7	85.5
			0.313	14.4	31.8	47.3	9.358	125	56.5	3.65	2.46	25.0	18.8	30.7	21.5	69.4
			0.375	17.1	37.6	56.0	11.08	145	65.4	3.62	2.43	29.0	21.8	35.9	25.2	58.5
			0.500	22.1	48.8	72.6	14.36	181	80.8	3.55	2.37	36.2	26.9	45.6	31.9	45.2
12	x	4	0.250	11.7	25.8	38.4	7.589	127	22.3	4.09	1.71	21.1	11.1	27.3	12.5	85.5
			0.313	14.1	31.8	47.3	9.372	153	26.6	4.05	1.69	25.6	13.3	33.4	15.1	69.4
			0.375	17.1	37.6	56.0	11.08	178	30.5	4.01	1.66	29.6	15.2	39.0	17.6	58.5
10	x	8	0.375	19.4	42.7	63.6	12.58	180	127	3.78	3.18	35.9	31.8	43.1	37.0	51.5
			0.500	25.2	55.5	82.7	16.36	226	160	3.72	3.12	45.2	39.9	55.1	47.2	39.7
12	x	6	0.375	19.4	42.7	63.6	12.58	228	77.2	4.26	2.48	38.1	25.7	47.7	29.4	51.5
			0.500	25.2	55.5	82.7	16.36	287	96.0	4.19	2.42	47.8	32.0	60.9	37.4	39.7
12	x	8	0.250	14.8	32.6	48.5	9.589	196	105	4.52	3.31	32.6	26.3	39.1	29.6	67.6
			0.313	18.3	40.3	60.0	11.86	239	128	4.49	3.28	39.8	32.0	47.9	36.3	54.6
			0.375	21.7	47.8	71.2	14.08	279	149	4.45	3.26	46.5	37.3	56.5	42.7	46.1
			0.500	28.3	62.3	92.9	18.36	353	188	4.39	3.20	58.9	46.9	72.4	54.7	35.3
14	x	6	0.313	18.3	40.3	60.0	11.86	288	76.7	4.93	2.54	41.2	25.6	51.9	28.7	54.6
			0.375	21.7	47.8	71.2	14.08	337	89.1	4.89	2.52	48.1	29.7	61.1	33.6	46.1
			0.500	28.3	62.3	92.9	18.36	426	111	4.82	2.46	60.8	37.1	78.3	42.9	35.3
14	x	10	0.375	26.3	58.0	86.4	17.08	476	284	5.28	4.08	68.0	56.8	81.5	64.8	38.0
			0.500	34.5	75.9	113	22.36	608	361	5.22	4.02	86.9	72.3	105	83.6	29.0
			0.625	42.3	93.2	139	27.43	728	431	5.15	3.96	104	86.2	127	101	23.6
16	x	8	0.250	17.9	39.4	58.6	11.59	393	135	5.82	3.42	49.1	33.8	60.3	37.4	55.9
			0.313	22.1	48.8	72.6	14.36	481	165	5.79	3.39	60.1	41.2	74.2	45.9	45.2
			0.375	26.3	58.0	86.4	17.08	565	193	5.75	3.36	70.6	48.2	87.6	54.2	38.0
			0.500	34.5	75.9	113	22.36	722	244	5.68	3.30	90.2	61.0	113	69.7	29.0
20	x	12	0.500	46.8	103	154	30.36	1,650	750	7.37	4.97	165	125	201	141	21.4
			0.625	57.7	127	189	37.43	2,000	904	7.30	4.91	200	151	245	172	17.3
			0.750	68.3	150	224	44.30	2,320	1,050	7.24	4.86	232	174	287	202	14.6
24	x	12	0.500	53.0	117	174	34.36	2,580	882	8.67	5.07	215	147	266	164	18.9
			0.625	65.4	144	215	42.43	3,130	1,070	8.59	5.01	261	178	325	201	15.3
			0.750	77.6	171	254	50.30	3,650	1,240	8.52	4.96	304	206	382	235	12.9

EN 10219

EN 10219 “Cold formed welded structural hollow sections of non-alloy and fine grain steels”

Mechanical properties and chemical composition

Refer to page 7-8.

Tolerances

The tolerances on dimensions are established in accordance with EN 10219-1&2

Characteristics	Tolerances	
Outside dimensions of side	(H,B＜100mm)	±1% with a min of ±0.5mm
H : Longest side	(100mm≦H,B≦200mm)	±0.8%
B : Shortest side	(200mm＜H,B)	±0.6%
Wall thickness(T)	(T≦5mm)	±10%
	(5mm＜T)	±0.50mm
Concavity/Convexity	Max 0.8% with a min of 0.5mm	
Squareness of sides	90°±1°	
External corner radius	(T≦6mm)	1.6T≦R≦2.4T
	(6mm＜T≦10mm)	2.0T≦R≦3.0T
	(10mm＜T)	2.4T≦R≦3.6T
Twist	2mm+0.5mm/m in length	
Straightness	0.15% in total length	
Mass	±6% in individual lengths	
Length Approximate	0,+50mm	
Exact L<6,000mm	0,+5mm	
6,000mm≦L≦10,000mm	0,+15mm	
10,000mm<L	0,+5mm+1mm/m	

NOTE

1)The outside dimensions are measured across the flats at positions at least 50mm from the end of the HSS.

Packing

In bare bundle (steel banded) or in bulk. Standard lengths are 6, 8 and 12 meter.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.

a)Manufacturer's Name b)Standard & Grade c)Size d)Manufacturing Date e)Heat No. f)Country of Origin

Inspection and Testing

EN 10219 is subject to tensile testing in accordance with EN 10002-1,

Charpy impact test in accordance with EN 10045-1.

If you need additional requirements, please consult us.

Available size range

Dimensions (mm-Size)

Size(mm)		Wall thickness(mm)																			
SQUARE	RECTANGULAR	1.6	2.0	2.3	2.5	3.0	3.2	4.0	4.5	5.0	6.0	6.3	8.0	9.0	10.0	12.0	12.5	16.0	19.0	20.0	22.0
	60 x 30	●▲	●▲	●▲	●▲	●▲	●▲	●	●												
50 x 50		●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
	60 x 40	●▲	●▲	●▲	●▲	●▲	●▲														
	70 x 40	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲												
60 x 60		●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
	75 x 45	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
	75 x 50			●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
	100 x 40	●▲	●▲	●▲	●▲	●▲	●▲														
75 x 75		●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●								
	100 x 50	●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
80 x 80				●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●								
	125 x 40	●▲	●▲	●▲	●▲	●▲	●▲														
90 x 90				●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲									
100 x 100		●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●					
	125 x 75	●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●	●							
	150 x 50			●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲										
	150 x 75					●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲							
	150 x 80					●▲	●▲	●▲	●▲	●▲	●▲										
120 x 120											●▲	●▲	●▲	●▲	●▲	●					
125 x 125				●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲					
	150 x 100			●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●	●					
150 x 150							●	●	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲				
	175 x 125								●▲	●▲	●▲	●▲	●▲	●▲	●	●					
	200 x 100						●	●	●▲	●▲	●▲	●▲	●▲	●▲	●	●					
175 x 175									●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲					
	200 x 150								●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲					
	250 x 100								●	●	●▲	●▲	●▲	●▲	●	●					
200 x 200									●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●			
	225 x 175								●	●	●▲										
	250 x 150								●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲				
	300 x 100								●	●	●▲	●▲	●▲	●▲							
	250 x 200										●▲	●▲	●▲	●▲	●▲	●▲					
	300 x 150										●▲	●▲	●▲	●▲	●▲	●▲					
250 x 250											●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●		
	300 x 200										●▲	●▲	●▲	●▲	●▲	●▲	●▲	●			
	350 x 150										●▲	●▲	●▲	●▲	●▲	●▲					
300 x 300											●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲		
	350 x 250										●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲			
	400 x 200										●▲	●▲	●▲	●▲	●▲	●▲	●▲				
350 x 350														●▲	●▲	●▲	●▲	●▲	●▲	●△	●□
	400 x 300													●▲	●▲	●▲	●▲	●			
400 x 400														●▲	●▲	●▲	●▲	●▲	●▲	●△	●□
	500 x 300															●▲	●▲	●▲	●▲		
450 x 450														●	●	●▲	●▲	●▲	●▲	●△	●□
	600 x 300															●▲	●▲	●▲	●▲		
500 x 500														●	●	●▲	●▲	●▲	●▲	●△	●□
550 x 550																●	●	●	●▲	●△	●□

● S275J0H/S275J2H Available △ S355J0H Available, S355J2H to be confirmed
▲ S355J0H/S355J2H Available □ S355J0H Available
If you require other sizes, please consult us.

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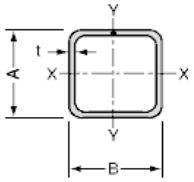
Section properties Square : 50 mm x 50 mm to 120 mm x 120 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
50 x 50	1.6	2.38	3.032	11.7	11.7	1.96	1.96	4.68	4.68	5.46	5.46	18.5	7.04	0.195	420
	2.0	2.93	3.737	14.1	14.1	1.95	1.95	5.66	5.66	6.66	6.66	22.6	8.51	0.193	341
	2.3	3.34	4.252	15.9	15.9	1.93	1.93	6.34	6.34	7.52	7.52	25.6	9.55	0.192	300
	2.5	3.60	4.589	16.9	16.9	1.92	1.92	6.78	6.78	8.07	8.07	27.5	10.2	0.191	278
	3.0	4.25	5.408	19.5	19.5	1.90	1.90	7.79	7.79	9.39	9.39	32.1	11.8	0.190	236
	3.2	4.50	5.727	20.4	20.4	1.89	1.89	8.16	8.16	9.89	9.89	33.9	12.3	0.189	222
	4.0	5.45	6.948	23.7	23.7	1.85	1.85	9.49	9.49	11.7	11.7	40.4	14.4	0.186	183
	4.5	6.02	7.669	25.5	25.5	1.82	1.82	10.2	10.2	12.8	12.8	44.1	15.6	0.185	166
	5.0	6.56	8.356	27.0	27.0	1.80	1.80	10.8	10.8	13.7	13.7	47.5	16.6	0.183	152
	6.0	7.56	9.633	29.5	29.5	1.75	1.75	11.8	11.8	15.3	15.3	53.2	18.2	0.179	132
60 x 60	1.6	2.88	3.672	20.7	20.7	2.37	2.37	6.89	6.89	7.99	7.99	32.4	10.4	0.235	347
	2.0	3.56	4.537	25.1	25.1	2.35	2.35	8.38	8.38	9.79	9.79	39.8	12.6	0.233	281
	2.3	4.06	5.172	28.3	28.3	2.34	2.34	9.44	9.44	11.1	11.1	45.2	14.2	0.232	246
	2.5	4.39	5.589	30.3	30.3	2.33	2.33	10.1	10.1	11.9	11.9	48.7	15.2	0.231	228
	3.0	5.19	6.608	35.1	35.1	2.31	2.31	11.7	11.7	14.0	14.0	57.1	17.7	0.230	193
	3.2	5.50	7.007	36.9	36.9	2.30	2.30	12.3	12.3	14.7	14.7	60.3	18.6	0.229	182
	4.0	6.71	8.548	43.6	43.6	2.26	2.26	14.5	14.5	17.6	17.6	72.6	22.0	0.226	149
	4.5	7.43	9.469	47.2	47.2	2.23	2.23	15.7	15.7	19.3	19.3	79.8	23.9	0.225	135
	5.0	8.13	10.36	50.5	50.5	2.21	2.21	16.8	16.8	20.9	20.9	86.4	25.6	0.223	123
	6.0	9.45	12.03	56.1	56.1	2.16	2.16	18.7	18.7	23.7	23.7	98.4	28.6	0.219	106
75 x 75	1.6	3.64	4.632	41.3	41.3	2.99	2.99	11.0	11.0	12.7	12.7	64.1	16.5	0.295	275
	2.0	4.50	5.737	50.5	50.5	2.97	2.97	13.5	13.5	15.6	15.6	79.0	20.2	0.293	222
	2.3	5.14	6.552	57.1	57.1	2.95	2.95	15.2	15.2	17.7	17.7	90.0	22.9	0.292	194
	2.5	5.56	7.089	61.4	61.4	2.94	2.94	16.4	16.4	19.1	19.1	97.1	24.6	0.291	180
	3.0	6.60	8.408	71.6	71.6	2.92	2.92	19.1	19.1	22.5	22.5	115	28.7	0.290	152
	3.2	7.01	8.927	75.5	75.5	2.91	2.91	20.1	20.1	23.8	23.8	121	30.3	0.289	143
	4.0	8.59	10.95	90.2	90.2	2.87	2.87	24.1	24.1	28.8	28.8	147	36.3	0.286	116
	4.5	9.55	12.17	98.6	98.6	2.85	2.85	26.3	26.3	31.7	31.7	163	39.7	0.285	105
	5.0	10.5	13.36	106	106	2.82	2.82	28.4	28.4	34.5	34.5	177	42.9	0.283	95.4
	6.0	12.3	15.63	120	120	2.77	2.77	32.0	32.0	39.6	39.6	205	48.7	0.279	81.5
	6.3	12.5	15.95	119	119	2.73	2.73	31.8	31.8	39.7	39.7	211	49.7	0.273	79.9
	8.0	15.1	19.24	134	134	2.64	2.64	35.7	35.7	46.1	46.1	247	56.7	0.266	66.2
80 x 80	2.3	5.50	7.012	69.9	69.9	3.16	3.16	17.5	17.5	20.3	20.3	110	26.2	0.312	182
	2.5	5.96	7.589	75.1	75.1	3.15	3.15	18.8	18.8	21.9	21.9	119	28.2	0.311	168
	3.0	7.07	9.008	87.8	87.8	3.12	3.12	22.0	22.0	25.8	25.8	140	33.0	0.310	141
	3.2	7.51	9.567	92.7	92.7	3.11	3.11	23.2	23.2	27.3	27.3	148	34.9	0.309	133
	4.0	9.22	11.75	111	111	3.07	3.07	27.8	27.8	33.1	33.1	180	41.8	0.306	108
	4.5	10.3	13.07	122	122	3.05	3.05	30.4	30.4	36.5	36.5	200	45.9	0.305	97.5
	5.0	11.3	14.36	131	131	3.03	3.03	32.9	32.9	39.7	39.7	218	49.7	0.303	88.7
	6.0	13.2	16.83	149	149	2.98	2.98	37.3	37.3	45.8	45.8	252	56.6	0.299	75.7
	6.3	13.5	17.21	149	149	2.94	2.94	37.1	37.1	46.1	46.1	261	57.9	0.293	74.0
	8.0	16.4	20.84	168	168	2.84	2.84	42.1	42.1	53.9	53.9	307	66.6	0.286	61.1
90 x 90	2.3	6.23	7.932	101	101	3.56	3.56	22.4	22.4	25.9	25.9	158	33.6	0.352	161
	2.5	6.74	8.589	109	109	3.56	3.56	24.1	24.1	28.0	28.0	170	36.2	0.351	148
	3.0	8.01	10.21	127	127	3.53	3.53	28.3	28.3	33.0	33.0	201	42.5	0.350	125
	3.2	8.51	10.85	135	135	3.52	3.52	29.9	29.9	35.0	35.0	214	44.9	0.349	117
	4.0	10.5	13.35	162	162	3.48	3.48	36.0	36.0	42.6	42.6	261	54.2	0.346	95.4
	4.5	11.7	14.87	178	178	3.46	3.46	39.5	39.5	47.1	47.1	289	59.6	0.345	85.7
	5.0	12.8	16.36	193	193	3.43	3.43	42.9	42.9	51.4	51.4	316	64.7	0.343	77.9
	6.0	15.1	19.23	220	220	3.39	3.39	49.0	49.0	59.5	59.5	368	74.2	0.339	66.2
	6.3	15.5	19.73	221	221	3.35	3.35	49.1	49.1	60.3	60.3	382	76.2	0.333	64.6
100 x 100	1.6	4.89	6.232	100	100	4.01	4.01	20.0	20.0	22.9	22.9	154	30.0	0.395	204
	2.0	6.07	7.737	123	123	3.99	3.99	24.6	24.6	28.3	28.3	191	36.9	0.393	165
	2.3	6.95	8.852	140	140	3.97	3.97	27.9	27.9	32.3	32.3	217	42.0	0.392	144
	2.5	7.53	9.589	151	151	3.96	3.96	30.1	30.1	34.9	34.9	235	45.2	0.391	133
	3.0	8.96	11.41	177	177	3.94	3.94	35.4	35.4	41.2	41.2	279	53.2	0.390	112
	3.2	9.52	12.13	187	187	3.93	3.93	37.5	37.5	43.7	43.7	296	56.3	0.389	105
	4.0	11.7	14.95	226	226	3.89	3.89	45.3	45.3	53.3	53.3	362	68.1	0.386	85.2
	4.5	13.1	16.67	249	249	3.87	3.87	49.9	49.9	59.0	59.0	402	75.1	0.385	76.4
	5.0	14.4	18.36	271	271	3.84	3.84	54.2	54.2	64.6	64.6	441	81.7	0.383	69.4
	6.0	17.0	21.63	311	311	3.79	3.79	62.3	62.3	75.1	75.1	514	94.1	0.379	58.9
	6.3	17.5	22.25	314	314	3.76	3.76	62.8	62.8	76.4	76.4	536	97.0	0.373	57.3
	8.0	21.4	27.24	366	366	3.67	3.67	73.2	73.2	91.1	91.1	645	114	0.366	46.8
	9.0	23.5	29.98	391	391	3.61	3.61	78.1	78.1	98.6	98.6	700	123	0.361	42.5
	10.0	25.6	32.57	411	411	3.55	3.55	82.2	82.2	105	105	750	130	0.357	39.1
	12.0	28.3	36.06	408	408	3.36	3.36	81.6	81.6	110	110	794	136	0.338	35.3
120 x 120	6.0	20.7	26.43	562	562	4.61	4.61	93.7	93.7	112	112	913	141	0.459	48.2
	6.3	21.4	27.29	572	572	4.58	4.58	95.3	95.3	114	114	955	146	0.453	46.7
	8.0	26.4	33.64	677	677	4.49	4.49	113	113	138	138	1,160	175	0.446	37.9
	9.0	29.2	37.18	730	730	4.43	4.43	122	122	150	150	1,270	189	0.441	34.3
	10.0	31.8	40.57	777	777	4.38	4.38	129	129	162	162	1,380	203	0.437	31.4
	12.0	35.8	45.66	806	806	4.20	4.20	134	134	174	174	1,520	219	0.418	27.9

NOTE

The calculation of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
6mm and less	1.0T	2.0T
more than 6mm and less than or equal to 10mm	1.5T	2.5T
more than 10mm	2.0T	3.0T



Section properties Square : 125 mm x 125 mm to 350 mm x 350 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
125 x 125	2.3	8.75	11.15	278	278	4.99	4.99	44.5	44.5	51.1	51.1	430	66.8	0.492	114
	2.5	9.49	12.09	300	300	4.98	4.98	48.1	48.1	55.3	55.3	465	72.1	0.491	105
	3.0	11.3	14.41	355	355	4.96	4.96	56.7	56.7	65.6	65.6	553	85.1	0.490	88.4
	3.2	12.0	15.33	376	376	4.95	4.95	60.1	60.1	69.6	69.6	587	90.2	0.489	83.1
	4.0	14.9	18.95	457	457	4.91	4.91	73.2	73.2	85.3	85.3	722	110	0.486	67.2
	4.5	16.6	21.17	506	506	4.89	4.89	80.9	80.9	94.8	94.8	804	122	0.485	60.2
	5.0	18.3	23.36	553	553	4.86	4.86	88.4	88.4	104	104	884	133	0.483	54.5
	6.0	21.7	27.63	641	641	4.82	4.82	103	103	122	122	1,040	154	0.479	46.1
	6.3	22.4	28.55	653	653	4.78	4.78	104	104	125	125	1,090	160	0.473	44.6
	8.0	27.7	35.24	775	775	4.69	4.69	124	124	151	151	1,330	192	0.466	36.1
	9.0	30.6	38.98	838	838	4.64	4.64	134	134	165	165	1,450	208	0.461	32.7
	10.0	33.4	42.57	893	893	4.58	4.58	143	143	178	178	1,570	223	0.457	29.9
	12.0	37.7	48.06	934	934	4.41	4.41	149	149	192	192	1,750	243	0.438	26.5
	12.5	38.9	49.54	949	949	4.38	4.38	152	152	197	197	1,790	248	0.436	25.7
150 x 150	3.2	14.5	18.53	661	661	5.97	5.97	88.1	88.1	101	101	1,030	132	0.589	68.8
	4.0	18.0	22.95	808	808	5.93	5.93	108	108	125	125	1,260	162	0.586	55.5
	4.5	20.1	25.67	896	896	5.91	5.91	120	120	139	139	1,410	180	0.585	49.6
	5.0	22.3	28.36	982	982	5.89	5.89	131	131	153	153	1,550	197	0.583	44.9
	6.0	26.4	33.63	1,150	1,150	5.84	5.84	153	153	180	180	1,830	230	0.579	37.9
	6.3	27.4	34.85	1,170	1,170	5.80	5.80	156	156	185	185	1,920	239	0.573	36.6
	8.0	33.9	43.24	1,410	1,410	5.71	5.71	188	188	226	226	2,360	289	0.566	29.5
	9.0	37.7	47.98	1,540	1,540	5.66	5.66	205	205	248	248	2,610	316	0.561	26.6
	10.0	41.3	52.57	1,650	1,650	5.61	5.61	220	220	269	269	2,840	341	0.557	24.2
	12.0	47.1	60.06	1,780	1,780	5.44	5.44	237	237	298	298	3,230	380	0.538	21.2
	12.5	48.7	62.04	1,820	1,820	5.41	5.41	242	242	306	306	3,320	389	0.536	20.5
175 x 175	4.5	23.7	30.17	1,450	1,450	6.93	6.93	166	166	192	192	2,260	249	0.685	42.2
	5.0	26.2	33.36	1,590	1,590	6.91	6.91	182	182	211	211	2,500	273	0.683	38.2
	6.0	31.1	39.63	1,860	1,860	6.86	6.86	213	213	249	249	2,950	320	0.679	32.1
	6.3	32.3	41.15	1,920	1,920	6.83	6.83	219	219	257	257	3,100	333	0.673	31.0
	8.0	40.2	51.24	2,330	2,330	6.74	6.74	266	266	316	316	3,840	406	0.666	24.9
	9.0	44.7	56.98	2,550	2,550	6.68	6.68	291	291	348	348	4,250	446	0.661	22.4
	10.0	49.1	62.57	2,750	2,750	6.63	6.63	314	314	379	379	4,640	484	0.657	20.4
	12.0	56.6	72.06	3,020	3,020	6.47	6.47	345	345	425	425	5,350	547	0.638	17.7
	12.5	58.5	74.54	3,090	3,090	6.44	6.44	354	354	438	438	5,520	562	0.636	17.1
200 x 200	4.5	27.2	34.67	2,190	2,190	7.95	7.95	219	219	253	253	3,410	329	0.785	36.7
	5.0	30.1	38.36	2,410	2,410	7.93	7.93	241	241	279	279	3,760	362	0.783	33.2
	6.0	35.8	45.63	2,830	2,830	7.88	7.88	283	283	330	330	4,460	426	0.779	27.9
	6.3	37.2	47.45	2,920	2,920	7.85	7.85	292	292	341	341	4,680	444	0.773	26.8
	8.0	46.5	59.24	3,570	3,570	7.76	7.76	357	357	421	421	5,820	544	0.766	21.5
	9.0	51.8	65.98	3,920	3,920	7.71	7.71	392	392	465	465	6,450	599	0.761	19.3
	10.0	57.0	72.57	4,250	4,250	7.65	7.65	425	425	508	508	7,070	652	0.757	17.6
	12.0	66.0	84.06	4,730	4,730	7.50	7.50	473	473	576	576	8,230	743	0.738	15.2
	12.5	68.3	87.04	4,860	4,860	7.47	7.47	486	486	594	594	8,500	766	0.736	14.6
	16.0	83.8	106.8	5,620	5,620	7.26	7.26	562	562	706	706	10,200	901	0.718	11.9
250 x 250	6.0	45.2	57.63	5,670	5,670	9.92	9.92	454	454	524	524	8,840	681	0.979	22.1
	6.3	47.1	60.05	5,870	5,870	9.89	9.89	470	470	544	544	9,290	711	0.973	21.2
	8.0	59.1	75.24	7,230	7,230	9.80	9.80	578	578	676	676	11,600	878	0.966	16.9
	9.0	65.9	83.98	7,980	7,980	9.75	9.75	639	639	750	750	12,900	972	0.961	15.2
	10.0	72.7	92.57	8,710	8,710	9.70	9.70	697	697	822	822	14,200	1,060	0.957	13.8
	12.0	84.8	108.1	9,860	9,860	9.55	9.55	789	789	944	944	16,700	1,230	0.938	11.8
	12.5	88.0	112.0	10,200	10,200	9.52	9.52	813	813	975	975	17,300	1,270	0.936	11.4
	16.0	109	138.8	12,000	12,000	9.32	9.32	964	964	1,180	1,180	21,100	1,520	0.918	9.18
	19.0	126	160.1	13,400	13,400	9.13	9.13	1,070	1,070	1,330	1,330	24,000	1,710	0.902	7.96
300 x 300	6.0	54.7	69.63	9,960	9,960	12.0	12.0	664	664	764	764	15,400	997	1.18	18.3
	6.3	57.0	72.65	10,300	10,300	11.9	11.9	689	689	795	795	16,200	1,040	1.17	17.5
	8.0	71.6	91.24	12,800	12,800	11.8	11.8	853	853	991	991	20,300	1,290	1.17	14.0
	9.0	80.1	102.0	14,200	14,200	11.8	11.8	946	946	1,100	1,100	22,700	1,430	1.16	12.5
	10.0	88.4	112.6	15,500	15,500	11.7	11.7	1,030	1,030	1,210	1,210	25,000	1,570	1.16	11.3
	12.0	104	132.1	17,800	17,800	11.6	11.6	1,180	1,180	1,400	1,400	29,500	1,830	1.14	9.65
	12.5	108	137.0	18,300	18,300	11.6	11.6	1,220	1,220	1,450	1,450	30,600	1,890	1.14	9.30
	16.0	134	170.8	22,100	22,100	11.4	11.4	1,470	1,470	1,770	1,770	37,800	2,300	1.12	7.46
	19.0	155	198.1	24,800	24,800	11.2	11.2	1,650	1,650	2,020	2,020	43,500	2,610	1.10	6.43
350 x 350	9.0	94.2	120.0	23,000	23,000	13.8	13.8	1,310	1,310	1,520	1,520	36,400	1,990	1.36	10.6
	10.0	104	132.6	25,200	25,200	13.8	13.8	1,440	1,440	1,670	1,670	40,100	2,180	1.36	9.61
	12.0	123	156.1	29,100	29,100	13.6	13.6	1,660	1,660	1,950	1,950	47,600	2,550	1.34	8.16
	12.5	127	162.0	30,000	30,000	13.6	13.6	1,720	1,720	2,020	2,020	49,400	2,640	1.34	7.86
	16.0	159	202.8	36,500	36,500	13.4	13.4	2,090	2,090	2,490	2,490	61,500	3,240	1.32	6.28
	19.0	185	236.1	41,400	41,400	13.2	13.2	2,370	2,370	2,860	2,860	71,100	3,700	1.30	5.40
	20.0	194	246.8	42,900	42,900	13.2	13.2	2,450	2,450	2,970	2,970	74,200	3,850	1.30	5.16
	22.0	210	267.9	45,700	45,700	13.1	13.1	2,610	2,610	3,190	3,190	80,100	4,120	1.29	4.76

EN 10219

Section properties Square : 400 mm x 400 mm to 550 mm x 550 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
400 x 400	9.0	108	138.0	34,800	34,800	15.9	15.9	1,740	1,740	2,010	2,010	54,700	2,630	1.56	9.23
	10.0	120	152.6	38,200	38,200	15.8	15.8	1,910	1,910	2,210	2,210	60,400	2,890	1.56	8.35
	12.0	141	180.1	44,300	44,300	15.7	15.7	2,220	2,220	2,590	2,590	71,800	3,400	1.54	7.07
	12.5	147	187.0	45,900	45,900	15.7	15.7	2,290	2,290	2,680	2,680	74,600	3,520	1.54	6.81
	16.0	184	234.8	56,200	56,200	15.5	15.5	2,810	2,810	3,320	3,320	93,300	4,340	1.52	5.43
	19.0	215	274.1	64,100	64,100	15.3	15.3	3,210	3,210	3,830	3,830	108,000	4,980	1.50	4.65
	20.0	225	286.8	66,600	66,600	15.2	15.2	3,330	3,330	3,990	3,990	113,000	5,190	1.50	4.44
	22.0	245	311.9	71,300	71,300	15.1	15.1	3,570	3,570	4,310	4,310	123,000	5,580	1.49	4.08
450 x 450	9.0	122	156.0	50,100	50,100	17.9	17.9	2,230	2,230	2,560	2,560	78,400	3,360	1.76	8.17
	10.0	136	172.6	55,100	55,100	17.9	17.9	2,450	2,450	2,830	2,830	86,600	3,700	1.76	7.38
	12.0	160	204.1	64,200	64,200	17.7	17.7	2,850	2,850	3,320	3,320	103,000	4,360	1.74	6.24
	12.5	167	212.0	66,500	66,500	17.7	17.7	2,950	2,950	3,440	3,440	107,000	4,520	1.74	6.01
	16.0	209	266.8	81,800	81,800	17.5	17.5	3,640	3,640	4,280	4,280	134,000	5,600	1.72	4.78
	19.0	245	312.1	93,900	93,900	17.3	17.3	4,170	4,170	4,950	4,950	157,000	6,450	1.70	4.08
	20.0	257	326.8	97,700	97,700	17.3	17.3	4,340	4,340	5,170	5,170	164,000	6,730	1.70	3.90
	22.0	279	355.9	105,000	105,000	17.2	17.2	4,660	4,660	5,590	5,590	178,000	7,260	1.70	3.58
500 x 500	9.0	137	174.0	69,300	69,300	20.0	20.0	2,770	2,770	3,190	3,190	108,000	4,190	1.96	7.32
	10.0	151	192.6	76,300	76,300	19.9	19.9	3,050	3,050	3,520	3,520	119,000	4,610	1.96	6.62
	12.0	179	228.1	89,200	89,200	19.8	19.8	3,570	3,570	4,130	4,130	142,000	5,440	1.94	5.59
	12.5	186	237.0	92,400	92,400	19.7	19.7	3,700	3,700	4,290	4,290	148,000	5,640	1.94	5.37
	16.0	235	298.8	114,000	114,000	19.6	19.6	4,570	4,570	5,350	5,350	186,000	7,010	1.92	4.26
	19.0	275	350.1	132,000	132,000	19.4	19.4	5,260	5,260	6,210	6,210	218,000	8,120	1.90	3.64
	20.0	288	366.8	137,000	137,000	19.3	19.3	5,480	5,480	6,490	6,490	228,000	8,470	1.90	3.47
	22.0	314	399.9	148,000	148,000	19.2	19.2	5,910	5,910	7,030	7,030	248,000	9,150	1.89	3.19
550 x 550	12.0	198	252.1	120,000	120,000	21.8	21.8	4,360	4,360	5,040	5,040	191,000	6,640	2.14	5.05
	12.5	206	262.0	124,000	124,000	21.8	21.8	4,520	4,520	5,230	5,230	198,000	6,890	2.14	4.86
	16.0	260	330.8	154,000	154,000	21.6	21.6	5,610	5,610	6,540	6,540	250,000	8,590	2.12	3.85
	19.0	305	388.1	178,000	178,000	21.4	21.4	6,480	6,480	7,610	7,610	292,000	9,970	2.10	3.28
	20.0	319	406.8	186,000	186,000	21.4	21.4	6,760	6,760	7,960	7,960	306,000	10,400	2.10	3.13
	22.0	348	443.9	201,000	201,000	21.3	21.3	7,300	7,300	8,640	8,640	333,000	11,300	2.09	2.87

Section properties Rectangular : 60 mm x 30 mm to 75 mm x 50 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
60 x 30	1.6	2.13	2.712	12.5	4.25	2.15	1.25	4.16	2.83	5.19	3.20	10.3	4.90	0.175	470
	2.0	2.62	3.337	15.1	5.08	2.12	1.23	5.02	3.39	6.31	3.89	12.6	5.88	0.173	382
	2.3	2.98	3.792	16.8	5.65	2.11	1.22	5.61	3.76	7.11	4.37	14.1	6.56	0.172	336
	2.5	3.21	4.089	17.9	6.00	2.09	1.21	5.98	4.00	7.62	4.67	15.1	6.98	0.171	312
	3.0	3.77	4.808	20.5	6.80	2.07	1.19	6.84	4.53	8.82	5.39	17.5	7.95	0.170	265
	3.2	3.99	5.087	21.5	7.08	2.05	1.18	7.15	4.72	9.27	5.66	18.4	8.30	0.169	250
	4.0	4.83	6.148	24.7	8.06	2.01	1.14	8.25	5.37	10.9	6.62	21.5	9.52	0.166	207
	4.5	5.31	6.769	26.4	8.53	1.98	1.12	8.80	5.69	11.8	7.14	23.1	10.1	0.165	188
60 x 40	1.6	2.38	3.032	15.2	8.16	2.24	1.64	5.07	4.08	6.12	4.64	16.9	6.72	0.195	420
	2.0	2.93	3.737	18.4	9.83	2.22	1.62	6.14	4.92	7.47	5.65	20.7	8.12	0.193	341
	2.3	3.34	4.252	20.7	11.0	2.20	1.61	6.88	5.50	8.44	6.38	23.4	9.10	0.192	300
	2.5	3.60	4.589	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	25.1	9.72	0.191	278
	3.0	4.25	5.408	25.4	13.4	2.17	1.58	8.46	6.72	10.5	7.94	29.3	11.2	0.190	236
	3.2	4.50	5.727	26.6	14.1	2.16	1.57	8.87	7.03	11.1	8.36	30.9	11.7	0.189	222
	4.0	5.45	6.948	31.0	16.3	2.11	1.53	10.3	8.14	13.2	9.89	36.7	13.7	0.186	183
	4.5	6.02	7.669	33.3	17.4	2.09	1.51	11.1	8.72	14.3	10.7	39.9	14.7	0.185	166
70 x 40	1.6	2.63	3.352	22.1	9.34	2.57	1.67	6.32	4.67	7.72	5.25	21.0	7.90	0.215	380
	2.0	3.25	4.137	26.9	11.3	2.55	1.65	7.67	5.64	9.44	6.41	25.7	9.56	0.213	308
	2.3	3.70	4.712	30.2	12.6	2.53	1.64	8.63	6.32	10.7	7.24	29.1	10.7	0.212	270
	2.5	3.99	5.089	32.3	13.5	2.52	1.63	9.24	6.75	11.5	7.78	31.3	11.5	0.211	250
	3.0	4.72	6.008	37.3	15.5	2.49	1.61	10.7	7.75	13.4	9.05	36.5	13.2	0.210	212
	3.2	5.00	6.367	39.2	16.2	2.48	1.60	11.2	8.12	14.1	9.54	38.5	13.9	0.209	200
	4.0	6.08	7.748	46.0	18.9	2.44	1.56	13.1	9.44	16.8	11.3	45.8	16.2	0.206	164
	4.5	6.73	8.569	49.7	20.3	2.41	1.54	14.2	10.1	18.4	12.3	50.0	17.5	0.205	149
75 x 45	1.6	2.88	3.672	28.4	12.9	2.78	1.88	7.56	5.75	9.16	6.46	28.2	9.63	0.235	347
	2.0	3.56	4.537	34.5	15.7	2.76	1.86	9.20	6.96	11.2	7.90	34.6	11.7	0.233	281
	2.3	4.06	5.172	38.9	17.6	2.74	1.84	10.4	7.82	12.7	8.94	39.3	13.2	0.232	246
	2.5	4.39	5.589	41.7	18.8	2.73	1.84	11.1	8.37	13.7	9.61	42.3	14.1	0.231	228
	3.0	5.19	6.608	48.3	21.7	2.70	1.81	12.9	9.66	16.0	11.2	49.4	16.3	0.230	193
	3.2	5.50	7.007	50.8	22.8	2.69	1.80	13.5	10.1	16.9	11.8	52.2	17.2	0.229	182
	4.0	6.71	8.548	59.9	26.7	2.65	1.77	16.0	11.9	20.2	14.1	62.6	20.2	0.226	149
	4.5	7.43	9.469	65.0	28.9	2.62	1.75	17.3	12.8	22.2	15.5	68.5	21.9	0.225	135
	5.0	8.13	10.36	69.6	30.8	2.59	1.72	18.6	13.7	24.0	16.7	74.0	23.4	0.223	123
	6.0	9.45	12.03	77.3	33.9	2.53	1.68	20.6	15.1	27.2	18.8	83.7	26.0	0.219	106
75 x 50	2.3	4.24	5.402	41.9	22.4	2.79	2.04	11.2	8.96	13.6	10.3	46.9	14.8	0.242	236
	2.5	4.58	5.839	45.0	24.0	2.77	2.03	12.0	9.60	14.6	11.0	50.5	15.9	0.241	218
	3.0	5.42	6.908	52.2	27.8	2.75	2.00	13.9	11.1	17.1	12.9	59.3	18.4	0.240	184
	3.2	5.75	7.327	54.9	29.2	2.74	2.00	14.6	11.7	18.0	13.6	62.6	19.3	0.239	174
	4.0	7.02	8.948	65.0	34.3	2.69	1.96	17.3	13.7	21.7	16.3	75.3	22.9	0.236	142
	4.5	7.79	9.919	70.6	37.2	2.67	1.94	18.8	14.9	23.8	17.9	82.7	24.9	0.235	128
	5.0	8.52	10.86	75.7	39.7	2.64	1.91	20.2	15.9	25.7	19.3	89.5	26.7	0.233	117
	6.0	9.92	12.63	84.5	44.1	2.59	1.87	22.5	17.6	29.2	21.9	102	29.8	0.229	101

Section properties Rectangular : 100 mm x 40 mm to 150 mm x 80 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
100 x 40	1.6	3.39	4,312	53.6	12.9	3.52	1.73	10.7	6.44	13.5	7.10	33.9	11.4	0.28	295
	2.0	4.19	5,337	65.4	15.6	3.50	1.71	13.1	7.81	16.5	8.69	41.5	13.9	0.27	239
	2.3	4.78	6.092	73.9	17.5	3.48	1.70	14.8	8.77	18.8	9.85	47.0	15.6	0.272	209
	2.5	5.17	6.589	79.3	18.8	3.47	1.69	15.9	9.39	20.2	10.6	50.5	16.8	0.271	193
	3.0	6.13	7.808	92.4	21.7	3.44	1.67	18.5	10.8	23.7	12.4	59.0	19.4	0.270	163
	3.2	6.51	8.287	97.3	22.8	3.43	1.66	19.5	11.4	25.1	13.1	62.3	20.4	0.269	154
100 x 50	1.6	3.64	4.632	61.3	21.1	3.64	2.13	12.3	8.43	15.0	9.33	50.1	14.5	0.295	275
	2.0	4.50	5.737	75.0	25.7	3.62	2.12	15.0	10.3	18.5	11.5	61.6	17.7	0.293	222
	2.3	5.14	6.552	84.8	29.0	3.60	2.10	17.0	11.6	21.0	13.0	69.9	20.0	0.292	194
	2.5	5.56	7.089	91.2	31.1	3.59	2.09	18.2	12.4	22.7	14.0	75.4	21.5	0.291	180
	3.0	6.60	8.408	106	36.1	3.56	2.07	21.3	14.4	26.7	16.4	88.6	25.0	0.290	152
	3.2	7.01	8.927	112	38.0	3.55	2.06	22.5	15.2	28.2	17.4	93.7	26.4	0.289	143
	4.0	8.59	10.95	134	44.9	3.50	2.03	26.8	18.0	34.1	20.9	113	31.4	0.286	116
	4.5	9.55	12.17	147	48.9	3.47	2.00	29.3	19.5	37.6	23.0	124	34.2	0.285	105
	5.0	10.5	13.36	158	52.5	3.44	1.98	31.7	21.0	40.8	25.0	135	36.8	0.283	95.4
	6.0	12.3	15.63	179	58.7	3.38	1.94	35.8	23.5	46.9	28.5	154	41.4	0.279	81.5
125 x 40	1.6	4.01	5.112	94.4	15.8	4.30	1.76	15.1	7.91	19.4	8.63	44.9	14.4	0.325	249
	2.0	4.97	6.337	116	19.2	4.27	1.74	18.5	9.61	23.8	10.6	55.1	17.5	0.323	201
	2.3	5.69	7.242	131	21.6	4.25	1.73	20.9	10.8	27.1	12.0	62.4	19.7	0.322	176
	2.5	6.15	7.839	141	23.2	4.24	1.72	22.5	11.6	29.3	12.9	67.1	21.2	0.321	163
	3.0	7.31	9.308	165	26.8	4.21	1.70	26.4	13.4	34.4	15.2	78.5	24.5	0.320	137
	3.2	7.76	9.887	174	28.2	4.19	1.69	27.8	14.1	36.5	16.0	82.8	25.8	0.319	129
	4.0	9.54	12.15	208	33.2	4.14	1.65	33.3	16.6	44.2	19.3	99.2	30.5	0.316	105
	4.5	10.6	13.52	228	36.0	4.11	1.63	36.5	18.0	48.8	21.1	109	33.2	0.315	94.2
125 x 50	2.3	6.05	7.702	148	35.5	4.39	2.15	23.7	14.2	29.9	15.7	93.9	25.3	0.342	165
	2.5	6.55	8.339	160	38.1	4.38	2.14	25.5	15.2	32.3	17.0	101	27.1	0.341	153
	3.0	7.78	9.908	187	44.4	4.34	2.12	29.9	17.7	38.1	20.0	119	31.6	0.340	129
	3.2	8.26	10.53	198	46.7	4.33	2.11	31.6	18.7	40.4	21.1	126	33.4	0.339	121
	4.0	10.2	12.95	238	55.6	4.28	2.07	38.0	22.2	49.0	25.5	152	39.8	0.336	98.4
	4.5	11.3	14.42	261	60.6	4.25	2.05	41.7	24.2	54.2	28.1	167	43.5	0.335	88.4
	5.0	12.4	15.86	283	65.2	4.22	2.03	45.2	26.1	59.1	30.6	182	47.0	0.333	80.3
	6.0	14.6	18.63	322	73.3	4.16	1.98	51.6	29.3	68.3	35.1	209	53.1	0.329	68.4
125 x 75	1.6	4.89	6.232	137	62.8	4.69	3.18	21.9	16.8	26.3	18.6	135	28.0	0.395	204
	2.0	6.07	7.737	169	77.1	4.67	3.16	27.0	20.6	32.5	22.9	167	34.4	0.393	165
	2.3	6.95	8.852	192	87.5	4.65	3.14	30.6	23.3	37.0	26.1	190	39.1	0.392	144
	2.5	7.53	9.589	207	94.2	4.64	3.14	33.0	25.1	40.0	28.2	205	42.1	0.391	133
	3.0	8.96	11.41	243	111	4.61	3.11	38.9	29.5	47.3	33.3	243	49.5	0.390	112
	3.2	9.52	12.13	257	117	4.60	3.10	41.1	31.1	50.1	35.3	258	52.3	0.389	105
	4.0	11.7	14.95	311	141	4.56	3.07	49.7	37.5	61.1	43.0	315	63.1	0.386	85.2
	4.5	13.1	16.67	342	155	4.53	3.04	54.8	41.2	67.7	47.5	349	69.5	0.385	76.4
	5.0	14.4	18.36	373	168	4.51	3.02	59.6	44.7	74.1	52.0	382	75.6	0.383	69.4
	6.0	17.0	21.63	428	192	4.45	2.98	68.6	51.1	86.2	60.3	444	86.8	0.379	58.9
	6.3	17.5	22.25	431	194	4.40	2.95	68.9	51.6	87.5	61.4	462	89.3	0.373	57.3
	8.0	21.4	27.24	502	224	4.29	2.87	80.2	59.7	104	72.9	551	105	0.366	46.8
	9.0	23.5	29.98	535	238	4.22	2.82	85.6	63.5	113	78.7	596	112	0.361	42.5
150 x 50	2.3	6.95	8.852	236	42.0	5.16	2.18	31.4	16.8	40.3	18.5	118	30.5	0.392	144
	2.5	7.53	9.589	254	45.2	5.15	2.17	33.9	18.1	43.5	19.9	128	32.8	0.391	133
	3.0	8.96	11.41	299	52.6	5.12	2.15	39.8	21.1	51.4	23.5	150	38.3	0.390	112
	3.2	9.52	12.13	316	55.5	5.10	2.14	42.1	22.2	54.5	24.9	159	40.4	0.389	105
	4.0	11.7	14.95	381	66.2	5.05	2.10	50.9	26.5	66.5	30.1	192	48.3	0.386	85.2
	4.5	13.1	16.67	420	72.2	5.02	2.08	56.0	28.9	73.6	33.2	212	52.9	0.385	76.4
	5.0	14.4	18.36	456	77.9	4.99	2.06	60.9	31.1	80.5	36.2	230	57.1	0.383	69.4
	6.0	17.0	21.63	524	87.9	4.92	2.02	69.8	35.2	93.5	41.7	264	64.8	0.379	58.9
150 x 75	3.0	10.1	12.91	380	130	5.42	3.17	50.6	34.7	62.5	38.7	312	59.8	0.440	98.7
	3.2	10.8	13.73	402	137	5.41	3.16	53.6	36.6	66.3	41.0	331	63.3	0.439	92.8
	4.0	13.3	16.95	488	166	5.37	3.13	65.1	44.2	81.1	50.1	404	76.6	0.436	75.2
	4.5	14.9	18.92	539	183	5.34	3.11	71.9	48.7	90.0	55.5	448	84.4	0.435	67.3
	5.0	16.4	20.86	588	198	5.31	3.08	78.4	52.9	98.6	60.7	491	91.9	0.433	61.1
	6.0	19.3	24.63	679	228	5.25	3.04	90.6	60.7	115	70.6	572	106	0.429	51.7
	6.3	19.9	25.40	686	231	5.20	3.01	91.4	61.6	117	72.2	596	109	0.423	50.2
	8.0	24.5	31.24	807	269	5.08	2.93	108	71.7	141	86.3	714	129	0.416	40.8
	9.0	27.1	34.48	866	287	5.01	2.89	116	76.6	153	93.6	775	138	0.411	36.9
150 x 80	3.0	10.4	13.21	396	150	5.47	3.37	52.8	37.5	64.7	41.9	349	64.1	0.450	96.4
	3.2	11.0	14.05	419	159	5.46	3.36	55.9	39.7	68.6	44.5	370	67.9	0.449	90.7
	4.0	13.6	17.35	509	192	5.42	3.33	67.9	48.0	84.0	54.4	453	82.3	0.446	73.4
	4.5	15.2	19.37	563	211	5.39	3.30	75.0	52.9	93.2	60.3	502	90.7	0.445	65.8
	5.0	16.8	21.36	614	230	5.36	3.28	81.9	57.5	102	66.0	551	98.9	0.443	59.6
	6.0	19.8	25.23	710	264	5.31	3.24	94.7	66.1	119	76.9	643	114	0.439	50.5

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Section properties Rectangular : 150 mm x 100 mm to 300 mm x 100 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
150 x 100	2.3	8.75	11.15	361	195	5.69	4.18	48.2	38.9	57.3	43.5	395	63.9	0.492	114
	2.5	9.49	12.09	390	210	5.68	4.17	52.0	42.0	62.0	47.0	427	69.0	0.491	105
	3.0	11.3	14.41	461	248	5.65	4.15	61.4	49.5	73.5	55.8	507	81.4	0.490	88.4
	3.2	12.0	15.33	488	262	5.64	4.14	65.1	52.5	78.0	59.2	539	86.3	0.489	83.1
	4.0	14.9	18.95	595	319	5.60	4.10	79.3	63.7	95.7	72.5	662	105	0.486	67.2
	4.5	16.6	21.17	658	352	5.58	4.08	87.8	70.4	106	80.5	736	116	0.485	60.2
	5.0	18.3	23.36	719	384	5.55	4.05	95.9	76.8	117	88.3	809	127	0.483	54.5
	6.0	21.7	27.63	835	444	5.50	4.01	111	88.8	137	103	948	147	0.479	46.1
	6.3	22.4	28.55	848	453	5.45	3.98	113	90.5	140	106	992	152	0.473	44.6
	8.0	27.7	35.24	1,010	536	5.35	3.90	134	107	169	128	1,210	182	0.466	36.1
	9.0	30.6	38.98	1,090	577	5.29	3.85	145	115	185	140	1,320	197	0.461	32.7
	10.0	33.4	42.57	1,160	614	5.23	3.80	155	123	199	150	1,430	211	0.457	29.9
	12.0	37.7	48.06	1,210	642	5.01	3.65	161	128	215	163	1,570	229	0.438	26.5
175 x 125	4.5	20.1	25.67	1,120	669	6.61	5.11	128	107	153	122	1,330	174	0.585	49.6
	5.0	22.3	28.36	1,230	733	6.59	5.08	141	117	169	134	1,460	191	0.583	44.9
	6.0	26.4	33.63	1,440	853	6.53	5.04	164	137	198	158	1,720	222	0.579	37.9
	6.3	27.4	34.85	1,470	875	6.49	5.01	168	140	204	162	1,810	231	0.573	36.6
	8.0	33.9	43.24	1,770	1,050	6.39	4.93	202	168	249	198	2,220	279	0.566	29.5
	9.0	37.7	47.98	1,930	1,140	6.34	4.88	220	183	274	217	2,450	305	0.561	26.6
	10.0	41.3	52.57	2,070	1,220	6.28	4.83	237	196	297	235	2,660	329	0.557	24.2
	12.0	47.1	60.06	2,220	1,320	6.08	4.69	254	211	328	260	3,020	365	0.538	21.2
200 x 100	3.2	14.5	18.53	981	337	7.28	4.27	98.1	67.5	120	74.7	801	116	0.589	68.8
	4.0	18.0	22.95	1,200	411	7.23	4.23	120	82.2	148	91.7	985	142	0.586	55.5
	4.5	20.1	25.67	1,330	455	7.20	4.21	133	90.9	165	102	1,100	157	0.585	49.6
	5.0	22.3	28.36	1,460	497	7.17	4.19	146	99.4	181	112	1,210	172	0.583	44.9
	6.0	26.4	33.63	1,700	577	7.12	4.14	170	115	213	132	1,420	200	0.579	37.9
	6.3	27.4	34.85	1,740	591	7.07	4.12	174	118	219	135	1,480	208	0.573	36.6
	8.0	33.9	43.24	2,090	705	6.95	4.04	209	141	267	165	1,810	250	0.566	29.5
	9.0	37.7	47.98	2,280	764	6.89	3.99	228	153	293	180	1,990	272	0.561	26.6
	10.0	41.3	52.57	2,450	818	6.82	3.94	245	164	318	195	2,150	292	0.557	24.2
	12.0	47.1	60.06	2,610	876	6.59	3.82	261	175	350	215	2,410	322	0.538	21.2
	12.5	48.7	62.04	2,660	892	6.55	3.79	266	178	359	221	2,470	329	0.536	20.5
200 x 150	4.5	23.7	30.17	1,760	1,130	7.64	6.13	176	151	209	172	2,170	243	0.685	42.2
	5.0	26.2	33.36	1,930	1,250	7.62	6.11	193	166	230	189	2,390	267	0.683	38.2
	6.0	31.1	39.63	2,270	1,460	7.57	6.06	227	194	271	223	2,830	313	0.679	32.1
	6.3	32.3	41.15	2,330	1,500	7.53	6.04	233	200	280	230	2,970	326	0.673	31.0
	8.0	40.2	51.24	2,830	1,820	7.43	5.95	283	242	344	283	3,660	396	0.666	24.9
	9.0	44.7	56.98	3,100	1,990	7.37	5.90	310	265	379	312	4,050	435	0.661	22.4
	10.0	49.1	62.57	3,350	2,140	7.32	5.85	335	286	413	339	4,430	471	0.657	20.4
	12.0	56.6	72.06	3,670	2,350	7.14	5.71	367	314	463	380	5,100	532	0.638	17.7
	12.5	58.5	74.54	3,760	2,410	7.10	5.69	376	321	476	392	5,260	547	0.636	17.1
250 x 100	4.5	23.7	30.17	2,330	557	8.78	4.30	186	111	235	124	1,470	198	0.685	42.2
	5.0	26.2	33.36	2,550	610	8.75	4.28	204	122	259	136	1,620	217	0.683	38.2
	6.0	31.1	39.63	2,990	710	8.69	4.23	239	142	305	160	1,900	253	0.679	32.1
	6.3	32.3	41.15	3,070	730	8.63	4.21	245	146	314	165	1,990	263	0.673	31.0
	8.0	40.2	51.24	3,720	875	8.52	4.13	297	175	385	201	2,440	317	0.666	24.9
	9.0	44.7	56.98	4,060	951	8.44	4.09	325	190	425	221	2,680	346	0.661	22.4
	10.0	49.1	62.57	4,390	1,020	8.37	4.04	351	204	462	240	2,910	373	0.657	20.4
	12.0	56.6	72.06	4,760	1,110	8.13	3.92	381	222	515	268	3,290	415	0.638	17.7
225 x 175	4.5	27.2	34.67	2,610	1,780	8.67	7.16	232	203	273	230	3,300	323	0.785	36.7
	5.0	30.1	38.36	2,870	1,950	8.64	7.13	255	223	301	254	3,640	356	0.783	33.2
	6.0	35.8	45.63	3,370	2,290	8.59	7.09	300	262	356	300	4,310	418	0.779	27.9
250 x 150	4.5	27.2	34.67	3,000	1,370	9.31	6.29	240	183	290	205	2,980	307	0.785	36.7
	5.0	30.1	38.36	3,300	1,510	9.28	6.27	264	201	320	225	3,280	337	0.783	33.2
	6.0	35.8	45.63	3,890	1,770	9.23	6.23	311	236	378	266	3,890	396	0.779	27.9
	6.3	37.2	47.45	4,000	1,820	9.18	6.20	320	243	391	276	4,080	412	0.773	26.8
	8.0	46.5	59.24	4,890	2,220	9.08	6.12	391	296	482	340	5,050	504	0.766	21.5
	9.0	51.8	65.98	5,370	2,430	9.02	6.07	430	324	533	375	5,600	554	0.761	19.3
	10.0	57.0	72.57	5,830	2,630	8.96	6.02	466	351	582	409	6,120	602	0.757	17.6
	12.0	66.0	84.06	6,460	2,930	8.77	5.90	517	390	658	463	7,090	684	0.738	15.2
	12.5	68.3	87.04	6,640	3,000	8.73	5.87	531	400	678	477	7,310	704	0.736	14.6
300 x 100	4.5	27.2	34.67	3,700	660	10.3	4.36	246	132	316	145	1,860	239	0.785	36.7
	5.0	30.1	38.36	4,070	723	10.3	4.34	271	145	348	160	2,040	262	0.783	33.2
	6.0	35.8	45.63	4,780	842	10.2	4.30	319	168	411	188	2,400	306	0.779	27.9
	6.3	37.2	47.45	4,910	868	10.2	4.28	327	174	425	194	2,520	318	0.773	26.8
	8.0	46.5	59.24	5,980	1,040	10.0	4.20	399	209	523	238	3,080	385	0.766	21.5
	9.0	51.8	65.98	6,560	1,140	9.97	4.15	437	228	578	262	3,390	421	0.761	19.3

Section properties Rectangular : 250 mm x 200 mm to 600 mm x 300 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
250 x 200	6.0	40.5	51.63	4,780	3,400	9.62	8.11	382	340	451	388	6,240	538	0.879	24.7
	6.3	42.2	53.75	4,940	3,510	9.58	8.08	395	351	468	402	6,550	562	0.873	23.7
	8.0	52.8	67.24	6,060	4,300	9.49	8.00	485	430	579	498	8,160	691	0.866	18.9
	9.0	58.9	74.98	6,680	4,740	9.44	7.95	534	474	642	551	9,070	763	0.861	17.0
	10.0	64.8	82.57	7,270	5,150	9.38	7.90	581	515	702	603	9,950	832	0.857	15.4
	12.0	75.4	96.06	8,160	5,790	9.22	7.77	653	579	801	688	11,600	955	0.838	13.3
	12.5	78.1	99.54	8,400	5,960	9.19	7.74	672	596	827	711	12,000	985	0.836	12.8
300 x 150	6.0	40.5	51.63	6,070	2,080	10.8	6.35	405	277	500	309	4,990	479	0.879	24.7
	6.3	42.2	53.75	6,270	2,150	10.8	6.32	418	287	517	321	5,230	499	0.873	23.7
	8.0	52.8	67.24	7,680	2,620	10.7	6.25	512	350	640	396	6,490	612	0.866	18.9
	9.0	58.9	74.98	8,470	2,880	10.6	6.20	564	384	709	439	7,200	674	0.861	17.0
	10.0	64.8	82.57	9,210	3,130	10.6	6.15	614	417	776	479	7,880	733	0.857	15.4
	12.0	75.4	96.06	10,300	3,500	10.4	6.03	687	466	883	546	9,150	837	0.838	13.3
	12.5	78.1	99.54	10,600	3,590	10.3	6.01	707	479	912	563	9,450	862	0.836	12.8
300 x 200	6.0	45.2	57.63	7,370	3,960	11.3	8.29	491	396	588	446	8,120	651	0.979	22.1
	6.3	47.1	60.05	7,620	4,100	11.3	8.27	508	410	610	463	8,520	680	0.973	21.2
	8.0	59.1	75.24	9,390	5,040	11.2	8.19	626	504	757	574	10,600	838	0.966	16.9
	9.0	65.9	83.98	10,400	5,560	11.1	8.14	692	556	840	637	11,800	927	0.961	15.2
	10.0	72.7	92.57	11,300	6,060	11.1	8.09	754	606	921	698	13,000	1,010	0.957	13.8
	12.0	84.8	108.1	12,800	6,850	10.9	7.96	853	685	1,060	801	15,200	1,170	0.938	11.8
	12.5	88.0	112.0	13,200	7,060	10.8	7.94	879	706	1,090	828	15,800	1,200	0.936	11.4
	16.0	109	138.8	15,600	8,340	10.6	7.75	1,040	834	1,320	1,000	19,200	1,440	0.918	9.18
350 x 150	6.0	45.2	57.63	8,910	2,390	12.4	6.44	509	319	636	353	6,120	562	0.979	22.1
	6.3	47.1	60.05	9,200	2,480	12.4	6.42	526	330	660	366	6,420	586	0.973	21.2
	8.0	59.1	75.24	11,300	3,030	12.3	6.34	647	404	818	453	7,970	719	0.966	16.9
	9.0	65.9	83.98	12,500	3,330	12.2	6.30	714	444	908	502	8,840	793	0.961	15.2
	10.0	72.7	92.57	13,600	3,620	12.1	6.25	779	482	995	549	9,680	864	0.957	13.8
	12.0	84.8	108.1	15,300	4,070	11.9	6.14	877	543	1,140	629	11,300	990	0.938	11.8
	12.5	88.0	112.0	15,800	4,190	11.9	6.11	903	558	1,180	649	11,600	1,020	0.936	11.4
350 x 250	6.0	54.7	69.63	12,500	7,460	13.4	10.3	712	597	843	671	14,600	967	1.18	18.3
	6.3	57.0	72.65	12,900	7,740	13.3	10.3	738	620	876	698	15,300	1,010	1.17	17.5
	8.0	71.6	91.24	16,000	9,570	13.2	10.2	914	766	1,090	869	19,100	1,250	1.17	14.0
	9.0	80.1	102.0	17,700	10,600	13.2	10.2	1,010	848	1,210	967	21,300	1,390	1.16	12.5
	10.0	88.4	112.6	19,400	11,600	13.1	10.1	1,110	927	1,330	1,060	23,500	1,520	1.16	11.3
	12.0	104	132.1	22,200	13,300	13.0	10.0	1,270	1,060	1,540	1,230	27,700	1,770	1.14	9.65
	12.5	108	137.0	22,900	13,700	12.9	9.99	1,310	1,100	1,600	1,270	28,800	1,830	1.14	9.30
	16.0	134	170.8	27,600	16,400	12.7	9.81	1,580	1,310	1,950	1,550	35,500	2,220	1.12	7.46
400 x 200	6.0	54.7	69.63	14,800	5,090	14.6	8.55	740	509	906	562	12,100	877	1.18	18.3
	6.3	57.0	72.65	15,300	5,290	14.5	8.53	767	529	942	585	12,700	916	1.17	17.5
	8.0	71.6	91.24	19,000	6,520	14.4	8.45	949	652	1,170	728	15,800	1,130	1.17	14.0
	9.0	80.1	102.0	21,000	7,200	14.4	8.40	1,050	720	1,310	809	17,600	1,260	1.16	12.5
	10.0	88.4	112.6	23,000	7,860	14.3	8.36	1,150	786	1,430	888	19,400	1,370	1.16	11.3
	12.0	104	132.1	26,300	8,980	14.1	8.24	1,310	898	1,660	1,030	22,800	1,590	1.14	9.65
	12.5	108	137.0	27,100	9,260	14.1	8.22	1,360	926	1,710	1,060	23,600	1,640	1.14	9.30
400 x 300	9.0	94.2	120.0	27,900	18,000	15.3	12.2	1,400	1,200	1,660	1,360	34,800	1,940	1.36	10.6
	10.0	104	132.6	30,600	19,700	15.2	12.2	1,530	1,320	1,820	1,500	38,400	2,130	1.36	9.61
	12.0	123	156.1	35,300	22,700	15.0	12.1	1,760	1,520	2,120	1,750	45,500	2,490	1.34	8.16
	12.5	127	162.0	36,500	23,500	15.0	12.0	1,820	1,570	2,200	1,810	47,200	2,580	1.34	7.86
	14.0	141	179.8	40,000	25,700	14.9	12.0	2,000	1,720	2,420	1,990	52,300	2,840	1.33	7.09
	16.0	159	202.8	44,400	28,500	14.8	11.9	2,220	1,900	2,710	2,230	58,700	3,160	1.32	6.28
500 x 300	12.0	141	180.1	60,600	27,700	18.3	12.4	2,420	1,850	2,960	2,090	62,600	3,160	1.54	7.07
	12.5	147	187.0	62,700	28,700	18.3	12.4	2,510	1,910	3,070	2,170	65,000	3,270	1.54	6.81
	16.0	184	234.8	76,800	35,000	18.1	12.2	3,070	2,330	3,800	2,680	81,000	4,020	1.52	5.43
	19.0	215	274.1	87,600	39,800	17.9	12.1	3,510	2,660	4,380	3,090	93,800	4,610	1.50	4.65
600 x 300	12.0	160	204.1	94,900	32,700	21.6	12.7	3,160	2,180	3,920	2,440	80,300	3,820	1.74	6.24
	12.5	167	212.0	98,300	33,900	21.5	12.6	3,280	2,260	4,070	2,530	83,400	3,960	1.74	6.01
	16.0	209	266.8	121,000	41,500	21.3	12.5	4,030	2,760	5,060	3,140	104,000	4,880	1.72	4.78
	19.0	245	312.1	139,000	47,400	21.1	12.3	4,620	3,160	5,850	3,620	121,000	5,610	1.70	4.08

AS/NZS 1163

AS/NZS 1163 “Cold-formed structural steel hollow sections”

Mechanical properties and chemical composition

Refer to page 7-8.

Tolerances

The tolerances on dimensions are established in accordance with AS/NZS 1163

Characteristics			Tolerances	
External dimensions			±1%, with minimum of ±0.5mm	
Thickness (t)			±10%	
Concavity/Convexity			Max. 0.8% or 0.5mm, whichever is greater	
Squareness of sides			90°±1°	
External corner profile			(Equivalent to 50x50 or less)	1.5t to 3.0t
			(Equivalent to greater than 50x50)	1.8t to 3.0t
Twist			2mm+0.5mm/m length	
Straightness			0.15% of total length	
Mass per unit length			Not less than 0.96 times the specified mass on individual lengths	
Length	Mill (or ‘unspecified’) length		0, +100mm	
	Precision length	L＜6,000mm	0, +5mm	
		6,000mm≦L≦10,000mm	0, +15mm	
		10,000mm＜L	0, +5mm+1mm/m	

NOTE

1)The External dimensions are measured across the flats at positions at least 50mm from the end of the HSS.

Packing

In bare bundle (steel banded) or in bulk. Standard lengths are 8 and 12 meter.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.
If you need additional requirements, please contact us.

a)Manufacturer's Name b)Standard & Grade c)Manufacturing Date & Time
b)Mill Identification e)Country of Origin

Inspection and Testing

AS/NZS 1163 is subject to tensile testing in accordance with AS 1391,
Charpy impact test in accordance with AS 1544.

Available size range

Dimensions (mm-size)

Size(mm)		Wall thickness(mm)														
Square	Rectangular	1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.0	8.0	9.0	10.0	12.0	12.5	16.0	19.0	22.0
	60 x 30	●▲	●▲	●▲	●▲	●▲	●										
50 x 50		●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲								
	60 x 40	●▲	●▲	●▲	●▲												
	70 x 40	●▲	●▲	●▲	●▲	●▲	●▲										
60 x 60		●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲								
	75 x 45	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲								
	75 x 50		●▲	●▲	●▲	●▲	●▲	●▲	●▲								
	100 x 40	●▲	●▲	●▲	●▲	●											
75 x 75			●▲	●▲	●▲	●▲	●▲	●▲	●▲	○							
	100 x 50		●▲	●▲	●▲	●▲	●▲	●▲	●▲								
80 x 80			●▲	●▲	●▲	●▲	●▲	●▲	●▲								
	125 x 40	●▲	●▲	●▲	●▲												
	102 x 76							●▲	●▲								
89 x 89						●▲	●▲	●▲	●▲								
90 x 90				●▲	●▲	●▲	●▲	●▲	●▲								
100 x 100				●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	○	○				
	125 x 75			●▲	●▲	●▲	●▲	●▲	●▲	●	●						
	150 x 50			●▲	●▲	●▲	●▲	●▲	●▲								
	150 x 75				●▲	●▲	●▲	●▲	●▲	●	●						
	152 x 76							●▲	●▲								
	150 x 80				●▲	●▲	●▲	●▲	●▲								
120 x 120											●						
125 x 125					●▲	●▲	●▲	●▲	●▲	●▲	●▲						
	150 x 100				●▲	●▲	●▲	●▲	●▲	●▲	●▲						
150 x 150							●▲	●▲	●▲	●▲	●▲						
	200 x 100						●▲	●▲	●▲	●▲	●▲						
175 x 175							●▲	●▲	●▲	●▲	●▲	●▲	●▲	○			
	200 x 150						●▲	●▲	●▲	●▲	●▲	●▲	●▲	○			
	250 x 100							●▲	●▲	●▲	●▲	○	○				
200 x 200								●▲	●▲	●▲	●▲	●▲	●▲	○△			
	250 x 150							●▲	●▲	●▲	●▲	●▲	●▲	○			
	300 x 100							●▲	●▲	●▲	●▲						
	250 x 200								●▲								
	300 x 150								●▲	●▲	●▲						
250 x 250									●▲	●▲	●▲	●▲	●▲	●▲	○		
	300 x 200								●▲	●▲	●▲	●▲	●▲	○△			
	350 x 150								●▲	●▲	●▲	●▲	●▲				
300 x 300									●▲	●▲	●▲	●▲	●▲	●▲	○	○	
	350 x 250								●▲	●▲	●▲	●▲	●▲	●▲	○		
	400 x 200								●▲	●▲	●▲	●▲	●▲	○△			
350 x 350											●▲	●▲	●▲	●▲	○	○	○
	400 x 300										●▲	●▲	●▲	●▲	○		
400 x 400											●▲	●▲	●▲	●▲	○	○	○
	500 x 300												●▲	●▲	○		
450 x 450													●▲	●▲	○	○	○
	600 x 300												●▲	●▲	○	○	
500 x 500													●▲	●▲	○	○	○
550 x 550																○	○

● C350/C350L0 available ○ C350/C350L0 to be confirmed
▲ C450 available △ C450 to be confirmed
Color painted C350 pre-galv (pure zinc & SuperDyma®) C350 pre-galv (pure zinc only)

If you require other sizes, please consult us.

AS/NZS 1163

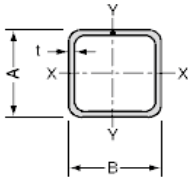
Section properties Square : 50 mm x 50 mm to 125 mm x 125 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
50 x 50	1.6	2.38	3.032	11.7	11.7	1.96	1.96	4.68	4.68	5.46	5.46	18.5	7.03	0.195	420
	2.0	2.93	3.737	14.1	14.1	1.95	1.95	5.66	5.66	6.66	6.66	22.6	8.51	0.193	341
	2.5	3.60	4.589	16.9	16.9	1.92	1.92	6.78	6.78	8.07	8.07	27.5	10.2	0.191	278
	3.0	4.25	5.408	19.5	19.5	1.90	1.90	7.79	7.79	9.39	9.39	32.1	11.8	0.190	236
	3.5	4.78	6.089	21.1	21.1	1.86	1.86	8.43	8.43	10.3	10.3	36.4	13.1	0.185	209
	4.0	5.35	6.811	22.9	22.9	1.83	1.83	9.15	9.15	11.4	11.4	40.3	14.3	0.183	187
	5.0	6.39	8.142	25.7	25.7	1.78	1.78	10.3	10.3	13.2	13.2	46.9	16.3	0.179	156
	6.0	7.32	9.324	27.5	27.5	1.72	1.72	11.0	11.0	14.5	14.5	51.8	17.7	0.174	137
60 x 60	1.6	2.88	3.672	20.7	20.7	2.37	2.37	6.89	6.89	7.99	7.99	32.4	10.4	0.235	347
	2.0	3.56	4.537	25.1	25.1	2.35	2.35	8.38	8.38	9.79	9.79	39.8	12.6	0.233	281
	2.5	4.39	5.589	30.3	30.3	2.33	2.33	10.1	10.1	11.9	11.9	48.7	15.2	0.231	228
	3.0	5.19	6.608	35.1	35.1	2.31	2.31	11.7	11.7	14.0	14.0	57.1	17.7	0.230	193
	3.5	5.88	7.489	38.6	38.6	2.27	2.27	12.9	12.9	15.5	15.5	65.2	19.8	0.225	170
	4.0	6.60	8.411	42.3	42.3	2.24	2.24	14.1	14.1	17.2	17.2	72.7	21.8	0.223	151
	5.0	7.96	10.14	48.6	48.6	2.19	2.19	16.2	16.2	20.2	20.2	86.0	25.3	0.219	126
	6.0	9.20	11.72	53.3	53.3	2.13	2.13	17.8	17.8	22.7	22.7	97.2	28.1	0.214	109
75 x 75	2.0	4.50	5.737	50.5	50.5	2.97	2.97	13.5	13.5	15.6	15.6	79.0	20.2	0.293	222
	2.5	5.56	7.089	61.4	61.4	2.94	2.94	16.4	16.4	19.1	19.1	97.1	24.6	0.291	180
	3.0	6.60	8.408	71.6	71.6	2.92	2.92	19.1	19.1	22.5	22.5	115	28.7	0.290	152
	3.5	7.53	9.589	79.7	79.7	2.88	2.88	21.3	21.3	25.3	25.3	132	32.5	0.285	133
	4.0	8.49	10.81	88.2	88.2	2.86	2.86	23.5	23.5	28.2	28.2	148	36.1	0.283	118
	5.0	10.3	13.14	103	103	2.80	2.80	27.5	27.5	33.6	33.6	177	42.6	0.279	96.9
	6.0	12.0	15.32	116	116	2.75	2.75	30.9	30.9	38.4	38.4	204	48.2	0.274	83.1
	8.0	15.1	19.24	134	134	2.64	2.64	35.7	35.7	46.1	46.1	247	56.7	0.266	66.2
80 x 80	2.0	4.82	6.137	61.7	61.7	3.17	3.17	15.4	15.4	17.8	17.8	96.3	23.2	0.313	208
	2.5	5.96	7.589	75.1	75.1	3.15	3.15	18.8	18.8	21.9	21.9	119	28.2	0.311	168
	3.0	7.07	9.008	87.8	87.8	3.12	3.12	22.0	22.0	25.8	25.8	140	33.0	0.310	141
	3.5	8.08	10.29	98.1	98.1	3.09	3.09	24.5	24.5	29.1	29.1	161	37.5	0.305	124
	4.0	9.11	11.61	109	109	3.06	3.06	27.2	27.2	32.5	32.5	181	41.7	0.303	110
	5.0	11.1	14.14	128	128	3.01	3.01	32.0	32.0	38.9	38.9	218	49.4	0.299	90.1
	6.0	13.0	16.52	144	144	2.95	2.95	36.0	36.0	44.5	44.5	252	56.1	0.294	77.1
89 x 89	3.5	9.07	11.55	138	138	3.46	3.46	31.0	31.0	36.5	36.5	225	47.2	0.341	110
	4.0	10.2	13.05	154	154	3.43	3.43	34.5	34.5	41.0	41.0	253	52.7	0.339	97.6
	5.0	12.5	15.94	182	182	3.38	3.38	40.8	40.8	49.2	49.2	306	62.8	0.335	79.9
	6.0	14.7	18.68	206	206	3.32	3.32	46.4	46.4	56.7	56.7	355	71.8	0.330	68.2
90 x 90	2.0	5.45	6.937	88.9	88.9	3.58	3.58	19.7	19.7	22.8	22.8	138	29.6	0.353	184
	2.5	6.74	8.589	109	109	3.56	3.56	24.1	24.1	28.0	28.0	170	36.2	0.351	148
	3.0	8.01	10.21	127	127	3.53	3.53	28.3	28.3	33.0	33.0	201	42.5	0.350	125
	3.5	9.18	11.69	143	143	3.50	3.50	31.8	31.8	37.4	37.4	233	48.4	0.345	109
	4.0	10.4	13.21	159	159	3.47	3.47	35.4	35.4	42.0	42.0	262	54.0	0.343	96.4
	5.0	12.7	16.14	189	189	3.42	3.42	41.9	41.9	50.4	50.4	317	64.4	0.339	78.9
	6.0	14.9	18.92	214	214	3.36	3.36	47.6	47.6	58.1	58.1	368	73.7	0.334	67.3
100 x 100	2.0	6.07	7.737	123	123	3.99	3.99	24.6	24.6	28.3	28.3	191	36.9	0.393	165
	2.5	7.53	9.589	151	151	3.96	3.96	30.1	30.1	34.9	34.9	235	45.2	0.391	133
	3.0	8.96	11.41	177	177	3.94	3.94	35.4	35.4	41.2	41.2	279	53.2	0.390	112
	3.5	10.3	13.09	200	200	3.91	3.91	39.9	39.9	46.8	46.8	322	60.7	0.385	97.3
	4.0	11.6	14.81	223	223	3.88	3.88	44.6	44.6	52.6	52.6	363	68.0	0.383	86.0
	5.0	14.2	18.14	266	266	3.83	3.83	53.1	53.1	63.5	63.5	442	81.4	0.379	70.2
	6.0	16.7	21.32	304	304	3.77	3.77	60.7	60.7	73.5	73.5	515	93.6	0.374	59.7
	8.0	21.4	27.24	366	366	3.67	3.67	73.2	73.2	91.1	91.1	645	114	0.366	46.8
	9.0	23.5	29.98	391	391	3.61	3.61	78.1	78.1	98.6	98.6	700	123	0.361	42.5
	10.0	25.6	32.57	411	411	3.55	3.55	82.2	82.2	105	105	750	130	0.357	39.1
	12.0	29.3	37.30	440	440	3.44	3.44	88.1	88.1	116	116	830	141	0.348	34.2
120 x 120	6.0	20.5	26.12	551	551	4.59	4.59	91.8	91.8	110	110	916	141	0.454	48.8
	8.0	26.4	33.64	677	677	4.49	4.49	113	113	138	138	1,160	175	0.446	37.9
	9.0	29.2	37.18	730	730	4.43	4.43	122	122	150	150	1,270	189	0.441	34.3
	10.0	31.8	40.57	777	777	4.38	4.38	129	129	162	162	1,380	203	0.437	31.4
	12.0	36.8	46.90	852	852	4.26	4.26	142	142	182	182	1,550	225	0.428	27.2
125 x 125	3.0	11.3	14.41	355	355	4.96	4.96	56.7	56.7	65.6	65.6	553	85.1	0.490	88.4
	3.5	13.0	16.59	403	403	4.93	4.93	64.4	64.4	74.9	74.9	641	97.6	0.485	76.8
	4.0	14.8	18.81	452	452	4.90	4.90	72.3	72.3	84.5	84.5	725	110	0.483	67.7
	5.0	18.2	23.14	544	544	4.85	4.85	87.1	87.1	103	103	887	133	0.479	55.0
	6.0	21.4	27.32	629	629	4.80	4.80	101	101	120	120	1,040	154	0.474	46.6
	8.0	27.7	35.24	775	775	4.69	4.69	124	124	151	151	1,330	192	0.466	36.1
	9.0	30.6	38.98	838	838	4.64	4.64	134	134	165	165	1,450	208	0.461	32.7
	10.0	33.4	42.57	893	893	4.58	4.58	143	143	178	178	1,570	223	0.457	29.9
	12.0	38.7	49.30	985	985	4.47	4.47	158	158	201	201	1,780	249	0.448	25.8
	12.5	39.9	50.89	1,000	1,000	4.44	4.44	161	161	206	206	1,830	254	0.446	25.0

NOTE

The calculation of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
3mm and less	1.0T	2.0T
greater than 3mm	1.5T	2.5T



Section properties Square : 150mm x 150mm to 550 mm x 550 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
150 x 150	4.0	17.9	22.81	800	800	5.92	5.92	107	107	124	124	1,270	162	0.583	55.8
	5.0	22.1	28.14	970	970	5.87	5.87	129	129	151	151	1,560	197	0.579	45.3
	6.0	26.2	33.32	1,130	1,130	5.82	5.82	150	150	178	178	1,840	229	0.574	38.2
	8.0	33.9	43.24	1,410	1,410	5.71	5.71	188	188	226	226	2,360	289	0.566	29.5
	9.0	37.7	47.98	1,540	1,540	5.66	5.66	205	205	248	248	2,610	316	0.561	26.6
	10.0	41.3	52.57	1,650	1,650	5.61	5.61	220	220	269	269	2,840	341	0.557	24.2
	12.0	48.1	61.30	1,850	1,850	5.50	5.50	247	247	307	307	3,260	386	0.548	20.8
	12.5	49.8	63.39	1,900	1,900	5.47	5.47	253	253	316	316	3,360	396	0.546	20.1
175 x 175	4.0	21.0	26.81	1,290	1,290	6.94	6.94	148	148	171	171	2,030	223	0.683	47.5
	5.0	26.0	33.14	1,570	1,570	6.89	6.89	180	180	209	209	2,510	273	0.679	38.4
	6.0	30.9	39.32	1,840	1,840	6.84	6.84	210	210	246	246	2,970	320	0.674	32.4
	8.0	40.2	51.24	2,330	2,330	6.74	6.74	266	266	316	316	3,840	406	0.666	24.9
	9.0	44.7	56.98	2,550	2,550	6.68	6.68	291	291	348	348	4,250	446	0.661	22.4
	10.0	49.1	62.57	2,750	2,750	6.63	6.63	314	314	379	379	4,640	484	0.657	20.4
	12.0	57.5	73.30	3,120	3,120	6.52	6.52	356	356	437	437	5,380	552	0.648	17.4
	12.5	59.6	75.89	3,200	3,200	6.50	6.50	366	366	450	450	5,550	568	0.646	16.8
200 x 200	4.0	24.2	30.81	1,950	1,950	7.96	7.96	195	195	225	225	3,060	295	0.783	41.3
	5.0	29.9	38.14	2,390	2,390	7.91	7.91	239	239	277	277	3,780	362	0.779	33.4
	6.0	35.6	45.32	2,800	2,800	7.86	7.86	280	280	327	327	4,480	425	0.774	28.1
	8.0	46.5	59.24	3,570	3,570	7.76	7.76	357	357	421	421	5,820	544	0.766	21.5
	9.0	51.8	65.98	3,920	3,920	7.71	7.71	392	392	465	465	6,450	599	0.761	19.3
	10.0	57.0	72.57	4,250	4,250	7.65	7.65	425	425	508	508	7,070	651	0.757	17.6
	12.0	67.0	85.30	4,860	4,860	7.55	7.55	486	486	588	588	8,240	749	0.748	14.9
	12.5	69.4	88.39	5,000	5,000	7.52	7.52	500	500	607	607	8,520	772	0.746	14.4
250 x 250	6.0	45.0	57.32	5,620	5,620	9.90	9.90	450	450	521	521	8,870	681	0.974	22.2
	8.0	59.1	75.24	7,230	7,230	9.80	9.80	578	578	676	676	11,600	878	0.966	16.9
	9.0	65.9	83.98	7,980	7,980	9.75	9.75	639	639	750	750	12,900	972	0.961	15.2
	10.0	72.7	92.57	8,710	8,710	9.70	9.70	697	697	822	822	14,200	1,060	0.957	13.8
	12.0	85.8	109.3	10,100	10,100	9.59	9.59	805	805	959	959	16,700	1,230	0.948	11.7
	12.5	89.0	113.4	10,400	10,400	9.57	9.57	830	830	992	992	17,300	1,270	0.946	11.2
	16.0	111	141.0	12,400	12,400	9.38	9.38	992	992	1,210	1,210	21,200	1,530	0.931	9.04
300 x 300	6.0	54.4	69.32	9,890	9,890	11.9	11.9	660	660	760	760	15,500	996	1.17	18.4
	8.0	71.6	91.24	12,800	12,800	11.8	11.8	853	853	991	991	20,300	1,290	1.17	14.0
	9.0	80.1	102.0	14,200	14,200	11.8	11.8	946	946	1,100	1,100	22,700	1,430	1.16	12.5
	10.0	88.4	112.6	15,500	15,500	11.7	11.7	1,030	1,030	1,210	1,210	25,000	1,570	1.16	11.3
	12.0	105	133.3	18,100	18,100	11.6	11.6	1,200	1,200	1,420	1,420	29,400	1,830	1.15	9.56
	12.5	109	138.4	18,700	18,700	11.6	11.6	1,240	1,240	1,470	1,470	30,500	1,900	1.15	9.21
	16.0	136	173.0	22,600	22,600	11.4	11.4	1,510	1,510	1,810	1,810	37,800	2,310	1.13	7.36
	19.0	158	201.2	25,500	25,500	11.3	11.3	1,700	1,700	2,070	2,070	43,600	2,630	1.12	6.33
350 x 350	9.0	94.2	120.0	23,000	23,000	13.8	13.8	1,310	1,310	1,520	1,520	36,400	1,990	1.36	10.6
	10.0	104	132.6	25,200	25,200	13.8	13.8	1,440	1,440	1,670	1,670	40,100	2,180	1.36	9.61
	12.0	123	157.3	29,400	29,400	13.7	13.7	1,680	1,680	1,970	1,970	47,500	2,560	1.35	8.10
	12.5	128	163.4	30,500	30,500	13.7	13.7	1,740	1,740	2,040	2,040	49,300	2,650	1.35	7.80
	16.0	161	205.0	37,200	37,200	13.5	13.5	2,130	2,130	2,530	2,530	61,400	3,250	1.33	6.21
	19.0	188	239.2	42,400	42,400	13.3	13.3	2,420	2,420	2,910	2,910	71,100	3,720	1.32	5.33
	22.0	214	272.0	47,100	47,100	13.2	13.2	2,690	2,690	3,270	3,270	80,300	4,150	1.31	4.68
400 x 400	9.0	108	138.0	34,800	34,800	15.9	15.9	1,740	1,740	2,010	2,010	54,700	2,630	1.56	9.23
	10.0	120	152.6	38,200	38,200	15.8	15.8	1,910	1,910	2,210	2,210	60,400	2,890	1.56	8.35
	12.0	142	181.3	44,800	44,800	15.7	15.7	2,240	2,240	2,610	2,610	71,600	3,400	1.55	7.03
	12.5	148	188.4	46,400	46,400	15.7	15.7	2,320	2,320	2,710	2,710	74,400	3,520	1.55	6.76
	16.0	186	237.0	57,100	57,100	15.5	15.5	2,850	2,850	3,370	3,370	93,000	4,350	1.53	5.38
	19.0	218	277.2	65,400	65,400	15.4	15.4	3,270	3,270	3,900	3,900	108,000	5,000	1.52	4.60
	22.0	248	316.0	73,000	73,000	15.2	15.2	3,650	3,650	4,390	4,390	123,000	5,610	1.51	4.03
450 x 450	12.0	161	205.3	64,800	64,800	17.8	17.8	2,880	2,880	3,340	3,340	103,000	4,360	1.75	6.21
	12.5	168	213.4	67,200	67,200	17.7	17.7	2,990	2,990	3,470	3,470	107,000	4,520	1.75	5.97
	16.0	211	269.0	82,900	82,900	17.6	17.6	3,690	3,690	4,330	4,330	134,000	5,610	1.73	4.74
	19.0	247	315.2	95,500	95,500	17.4	17.4	4,240	4,240	5,020	5,020	156,000	6,480	1.72	4.04
	22.0	283	360.0	107,000	107,000	17.2	17.2	4,760	4,760	5,680	5,680	178,000	7,290	1.71	3.54
500 x 500	12.0	180	229.3	90,000	90,000	19.8	19.8	3,600	3,600	4,160	4,160	142,000	5,450	1.95	5.56
	12.5	187	238.4	93,300	93,300	19.8	19.8	3,730	3,730	4,320	4,320	148,000	5,650	1.95	5.34
	16.0	236	301.0	116,000	116,000	19.6	19.6	4,630	4,630	5,410	5,410	186,000	7,030	1.93	4.23
	19.0	277	353.2	134,000	134,000	19.4	19.4	5,340	5,340	6,290	6,290	217,000	8,140	1.92	3.61
	22.0	317	404.0	150,000	150,000	19.3	19.3	6,010	6,010	7,130	7,130	247,000	9,190	1.91	3.15
550 x 550	19.0	307	391.2	181,000	181,000	21.5	21.5	6,570	6,570	7,700	7,700	291,000	9,990	2.12	3.26
	22.0	352	448.0	204,000	204,000	21.3	21.3	7,420	7,420	8,750	8,750	333,000	11,300	2.11	2.84

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Section properties Rectangular : 60 mm x 30 mm to 125 mm x 50 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
60 x 30	1.6	2.13	2.712	12.5	4.25	2.15	1.25	4.16	2.83	5.19	3.20	10.3	4.90	0.175	470
	2.0	2.62	3.337	15.1	5.08	2.12	1.23	5.02	3.39	6.31	3.89	12.6	5.88	0.173	382
	2.5	3.21	4.089	17.9	6.00	2.09	1.21	5.98	4.00	7.62	4.67	15.1	6.98	0.171	312
	3.0	3.77	4.808	20.5	6.80	2.07	1.19	6.84	4.53	8.82	5.39	17.5	7.95	0.170	265
	3.5	4.23	5.389	21.8	7.24	2.01	1.16	7.27	4.83	9.60	5.88	19.5	8.69	0.165	236
	4.0	4.72	6.011	23.5	7.75	1.98	1.14	7.83	5.17	10.5	6.41	21.2	9.37	0.163	212
60 x 40	1.6	2.38	3.032	15.2	8.16	2.24	1.64	5.07	4.08	6.12	4.64	16.9	6.72	0.195	420
	2.0	2.93	3.737	18.4	9.83	2.22	1.62	6.14	4.92	7.47	5.65	20.7	8.12	0.193	341
	2.5	3.60	4.589	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	25.1	9.72	0.191	278
	3.0	4.25	5.408	25.4	13.4	2.17	1.58	8.46	6.72	10.5	7.94	29.3	11.2	0.190	236
	3.5	4.78	6.089	27.4	14.5	2.12	1.54	9.14	7.26	11.6	8.75	33.1	12.4	0.185	209
	4.0	5.35	6.811	29.8	15.7	2.09	1.52	9.92	7.86	12.7	9.62	36.5	13.5	0.183	187
70 x 40	1.6	2.63	3.352	22.1	9.34	2.57	1.67	6.32	4.67	7.72	5.25	21.0	7.90	0.215	380
	2.0	3.25	4.137	26.9	11.3	2.55	1.65	7.67	5.64	9.44	6.41	25.7	9.56	0.213	308
	2.5	3.99	5.089	32.3	13.5	2.52	1.63	9.24	6.75	11.5	7.78	31.3	11.5	0.211	250
	3.0	4.72	6.008	37.3	15.5	2.49	1.61	10.7	7.75	13.4	9.05	36.5	13.2	0.210	212
	3.5	5.33	6.789	40.6	16.9	2.44	1.58	11.6	8.43	14.8	10.0	41.3	14.7	0.205	188
	4.0	5.97	7.611	44.3	18.3	2.41	1.55	12.7	9.17	16.4	11.1	45.7	16.1	0.203	167
75 x 45	1.6	2.88	3.672	28.4	12.9	2.78	1.88	7.56	5.75	9.16	6.46	28.2	9.63	0.235	347
	2.0	3.56	4.537	34.5	15.7	2.76	1.86	9.20	6.96	11.2	7.90	34.6	11.7	0.233	281
	2.5	4.39	5.589	41.7	18.8	2.73	1.84	11.1	8.37	13.7	9.61	42.3	14.1	0.231	228
	3.0	5.19	6.608	48.3	21.7	2.70	1.81	12.9	9.66	16.0	11.2	49.4	16.3	0.230	193
	3.5	5.88	7.489	52.9	23.8	2.66	1.78	14.1	10.6	17.8	12.5	56.3	18.3	0.225	170
	4.0	6.60	8.411	58.0	26.0	2.63	1.76	15.5	11.6	19.7	13.8	62.5	20.1	0.223	151
	5.0	7.96	10.14	66.5	29.7	2.56	1.71	17.7	13.2	23.1	16.2	73.5	23.1	0.219	126
	6.0	9.20	11.72	72.9	32.3	2.49	1.66	19.5	14.4	26.0	18.1	82.4	25.5	0.214	109
75 x 50	2.0	3.72	4.737	37.2	19.9	2.80	2.05	9.91	7.96	12.0	9.06	41.4	13.1	0.243	269
	2.5	4.58	5.839	45.0	24.0	2.77	2.03	12.0	9.60	14.6	11.0	50.5	15.9	0.241	218
	3.0	5.42	6.908	52.2	27.8	2.75	2.00	13.9	11.1	17.1	12.9	59.3	18.4	0.240	184
	3.5	6.15	7.839	57.4	30.5	2.70	1.97	15.3	12.2	19.0	14.4	67.7	20.6	0.235	162
	4.0	6.92	8.811	63.0	33.5	2.67	1.95	16.8	13.4	21.1	16.0	75.4	22.7	0.233	145
	5.0	8.35	10.64	72.7	38.4	2.61	1.90	19.4	15.4	24.9	18.8	89.1	26.4	0.229	120
	6.0	9.67	12.32	80.1	42.1	2.55	1.85	21.4	16.9	28.1	21.1	101	29.3	0.224	103
100 x 40	1.6	3.38	4.312	53.6	12.9	3.52	1.73	10.7	6.44	13.5	7.10	33.9	11.4	0.275	295
	2.0	4.19	5.337	65.4	15.6	3.50	1.71	13.1	7.81	16.5	8.69	41.5	13.9	0.273	239
	2.5	5.17	6.589	79.3	18.8	3.47	1.69	15.9	9.39	20.2	10.6	50.5	16.8	0.271	193
	3.0	6.13	7.808	92.4	21.7	3.44	1.67	18.5	10.8	23.7	12.4	59.0	19.4	0.270	163
	3.5	6.98	8.889	102	23.9	3.38	1.64	20.4	11.9	26.6	13.9	67.1	21.7	0.265	143
100 x 50	2.0	4.50	5.737	75.0	25.7	3.62	2.12	15.0	10.3	18.5	11.5	61.6	17.7	0.293	222
	2.5	5.56	7.089	91.2	31.1	3.59	2.09	18.2	12.4	22.7	14.0	75.4	21.5	0.291	180
	3.0	6.60	8.408	106	36.1	3.56	2.07	21.3	14.4	26.7	16.4	88.6	25.0	0.290	152
	3.5	7.53	9.589	118	40.0	3.51	2.04	23.6	16.0	29.9	18.5	101	28.2	0.285	133
	4.0	8.49	10.81	131	44.1	3.48	2.02	26.1	17.6	33.4	20.6	113	31.2	0.283	118
	5.0	10.3	13.14	153	51.1	3.41	1.97	30.6	20.4	39.8	24.4	135	36.5	0.279	96.9
	6.0	12.0	15.32	171	56.7	3.34	1.92	34.2	22.7	45.3	27.7	153	40.9	0.274	83.1
125 x 40	1.6	4.01	5.112	94.4	15.8	4.30	1.76	15.1	7.91	19.4	8.63	44.9	14.4	0.325	249
	2.0	4.97	6.337	116	19.2	4.27	1.74	18.5	9.61	23.8	10.6	55.1	17.5	0.323	201
	2.5	6.15	7.839	141	23.2	4.24	1.72	22.5	11.6	29.3	12.9	67.1	21.2	0.321	163
	3.0	7.31	9.308	165	26.8	4.21	1.70	26.4	13.4	34.4	15.2	78.5	24.5	0.320	137
	3.5	8.35	10.64	183	29.7	4.15	1.67	29.3	14.9	38.8	17.1	89.3	27.6	0.315	120
125 x 50	2.0	5.29	6.737	131	31.4	4.41	2.16	20.9	12.6	26.3	13.9	82.7	22.3	0.343	189
	2.5	6.55	8.339	160	38.1	4.38	2.14	25.5	15.2	32.3	17.0	101	27.1	0.341	153
	3.0	7.78	9.908	187	44.4	4.34	2.12	29.9	17.7	38.1	20.0	119	31.6	0.340	129
	3.5	8.90	11.34	209	49.5	4.29	2.09	33.4	19.8	43.0	22.5	136	35.8	0.335	112
	4.0	10.1	12.81	232	54.7	4.26	2.07	37.2	21.9	48.2	25.2	152	39.7	0.333	99.4
	5.0	12.3	15.64	274	63.8	4.19	2.02	43.9	25.5	57.7	30.0	182	46.7	0.329	81.4
	6.0	14.4	18.32	310	71.4	4.11	1.97	49.6	28.5	66.4	34.3	208	52.6	0.324	69.5

Section properties Rectangular : 102 mm x 76 mm to 175 mm x 125 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
102 x 76	3.5	9.07	11.55	168	107	3.82	3.05	33.0	28.2	39.9	32.6	214	46.1	0.341	110
	4.0	10.2	13.05	187	119	3.79	3.02	36.8	31.3	44.7	36.6	241	51.4	0.339	97.6
	5.0	12.5	15.94	222	141	3.73	2.97	43.6	37.0	53.7	43.9	291	61.2	0.335	79.9
	6.0	14.7	18.68	252	159	3.67	2.92	49.5	42.0	61.9	50.5	338	69.8	0.330	68.2
127 x 51	3.5	9.07	11.55	220	52.6	4.37	2.13	34.7	20.6	44.6	23.4	144	37.2	0.341	110
	4.0	10.2	13.05	245	58.1	4.33	2.11	38.6	22.8	50.0	26.2	161	41.3	0.339	97.6
	5.0	12.5	15.94	290	67.9	4.26	2.06	45.6	26.6	59.9	31.3	193	48.6	0.335	79.9
	6.0	14.7	18.68	328	76.1	4.19	2.02	51.6	29.8	68.9	35.8	220	54.9	0.330	68.2
125 x 75	2.0	6.07	7.737	169	77.1	4.67	3.16	27.0	20.6	32.5	22.9	167	34.4	0.393	165
	2.5	7.53	9.589	207	94.2	4.64	3.14	33.0	25.1	40.0	28.2	205	42.1	0.391	133
	3.0	8.96	11.41	243	111	4.61	3.11	38.9	29.5	47.3	33.3	243	49.5	0.390	112
	3.5	10.3	13.09	273	124	4.57	3.08	43.8	33.2	53.6	37.8	280	56.4	0.385	97.3
	4.0	11.6	14.81	305	139	4.54	3.06	48.9	37.0	60.3	42.4	316	63.0	0.383	86.0
	5.0	14.2	18.14	364	165	4.48	3.01	58.3	43.9	72.7	51.1	383	75.3	0.379	70.2
	6.0	16.7	21.32	416	187	4.42	2.96	66.6	50.0	84.2	59.1	444	86.2	0.374	59.7
	8.0	21.4	27.24	502	224	4.29	2.87	80.2	59.7	104	72.9	551	105	0.366	46.8
	9.0	23.5	29.98	535	238	4.22	2.82	85.6	63.5	113	78.7	596	112	0.361	42.5
150 x 50	2.0	6.07	7.737	208	37.2	5.18	2.19	27.7	14.9	35.3	16.3	104	26.9	0.393	165
	2.5	7.53	9.589	254	45.2	5.15	2.17	33.9	18.1	43.5	19.9	128	32.8	0.391	133
	3.0	8.96	11.41	299	52.6	5.12	2.15	39.8	21.1	51.4	23.5	150	38.3	0.390	112
	3.5	10.3	13.09	335	59.0	5.06	2.12	44.7	23.6	58.3	26.6	172	43.3	0.385	97.3
	4.0	11.6	14.81	374	65.3	5.02	2.10	49.8	26.1	65.4	29.8	193	48.2	0.383	86.0
	5.0	14.2	18.14	444	76.5	4.95	2.05	59.2	30.6	78.9	35.7	230	56.8	0.379	70.2
	6.0	16.7	21.32	506	86.0	4.87	2.01	67.5	34.4	91.2	40.9	263	64.3	0.374	59.7
150 x 75	3.0	10.1	12.91	380	130	5.42	3.17	50.6	34.7	62.5	38.7	312	59.8	0.440	98.7
	3.5	11.6	14.84	429	147	5.38	3.15	57.2	39.2	71.1	44.1	360	68.3	0.435	85.8
	4.0	13.2	16.81	480	164	5.35	3.12	64.0	43.7	80.0	49.5	406	76.4	0.433	75.8
	5.0	16.2	20.64	576	195	5.28	3.08	76.8	52.1	97.0	59.9	492	91.6	0.429	61.7
	6.0	19.1	24.32	662	223	5.22	3.03	88.2	59.5	113	69.5	573	105	0.424	52.4
	8.0	24.5	31.24	807	269	5.08	2.93	108	71.7	141	86.3	714	129	0.416	40.8
	9.0	27.1	34.48	866	287	5.01	2.89	116	76.6	153	93.6	775	138	0.411	36.9
152 x 76	5.0	16.4	20.94	601	204	5.36	3.12	79.0	53.7	99.8	61.6	513	94.3	0.435	60.8
	6.0	19.4	24.68	691	233	5.29	3.07	90.9	61.4	116	71.5	598	108	0.430	51.6
150 x 80	3.0	10.4	13.21	396	150	5.47	3.37	52.8	37.5	64.7	41.9	349	64.1	0.450	96.4
	3.5	11.9	15.19	448	170	5.43	3.34	59.7	42.5	73.7	47.8	403	73.3	0.445	83.9
	4.0	13.5	17.21	502	190	5.40	3.32	66.9	47.4	83.0	53.8	454	82.1	0.443	74.0
	5.0	16.6	21.14	602	227	5.34	3.27	80.3	56.6	101	65.1	552	98.6	0.439	60.3
	6.0	19.6	24.92	693	259	5.27	3.23	92.4	64.9	117	75.6	644	114	0.434	51.1
150 x 100	3.0	11.3	14.41	461	248	5.65	4.15	61.4	49.5	73.5	55.8	507	81.4	0.490	88.4
	3.5	13.0	16.59	523	281	5.61	4.12	69.7	56.2	83.9	63.7	588	93.3	0.485	76.8
	4.0	14.8	18.81	587	315	5.59	4.09	78.3	63.0	94.6	71.8	664	105	0.483	67.7
	5.0	18.2	23.14	707	379	5.53	4.04	94.3	75.7	115	87.3	812	127	0.479	55.0
	6.0	21.4	27.32	817	436	5.47	4.00	109	87.3	134	102	951	147	0.474	46.6
	8.0	27.7	35.24	1,010	536	5.35	3.90	134	107	169	128	1,210	182	0.466	36.1
	9.0	30.6	38.98	1,090	577	5.29	3.85	145	115	185	140	1,320	197	0.461	32.7
	10.0	33.4	42.57	1,160	614	5.23	3.80	155	123	199	150	1,430	211	0.457	29.9
	12.0	38.7	49.30	1,280	674	5.10	3.70	171	135	224	169	1,610	234	0.448	25.8
	12.5	39.9	50.89	1,310	686	5.07	3.67	174	137	230	173	1,650	239	0.446	25.0
175 x 125	4.0	17.9	22.81	1,000	598	6.62	5.12	114	95.7	136	109	1,200	157	0.583	55.8
	5.0	22.1	28.14	1,210	724	6.57	5.07	139	116	167	133	1,470	190	0.579	45.3
	6.0	26.2	33.32	1,410	841	6.51	5.02	161	135	196	156	1,730	222	0.574	38.2
	8.0	33.9	43.24	1,770	1,050	6.39	4.93	202	168	249	198	2,220	279	0.566	29.5
	9.0	37.7	47.98	1,930	1,140	6.34	4.88	220	183	274	217	2,450	305	0.561	26.6
	10.0	41.3	52.57	2,070	1,220	6.28	4.83	237	196	297	235	2,660	329	0.557	24.2
	12.0	48.1	61.30	2,320	1,370	6.15	4.73	265	219	339	268	3,050	371	0.548	20.8

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Section properties Rectangular : 200 mm x 100 mm to 350 mm x 150 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
200 x 100	4.0	17.9	22.81	1,190	407	7.21	4.23	119	81.5	147	91	989	142	0.583	55.8
	5.0	22.1	28.14	1,440	492	7.15	4.18	144	98.3	179	111	1,210	172	0.579	45.3
	6.0	26.2	33.32	1,670	569	7.08	4.13	167	114	210	130	1,420	200	0.574	38.2
	8.0	33.9	43.24	2,090	705	6.95	4.04	209	141	267	165	1,810	250	0.566	29.5
	9.0	37.7	47.98	2,280	764	6.89	3.99	228	153	293	180	1,990	272	0.561	26.6
200 x 150	4.0	21.0	26.81	1,570	1,010	7.65	6.15	157	135	186	153	1,950	218	0.683	47.5
	5.0	26.0	33.14	1,910	1,230	7.60	6.10	191	164	228	188	2,400	267	0.679	38.4
	6.0	30.9	39.32	2,240	1,440	7.54	6.05	224	192	268	221	2,840	312	0.674	32.4
	8.0	40.2	51.24	2,830	1,820	7.43	5.95	283	242	344	283	3,660	396	0.666	24.9
	9.0	44.7	56.98	3,100	1,990	7.37	5.90	310	265	379	312	4,050	435	0.661	22.4
	10.0	49.1	62.57	3,350	2,140	7.32	5.85	335	286	413	339	4,430	471	0.657	20.4
	12.0	57.5	73.30	3,800	2,430	7.20	5.75	380	323	476	390	5,130	538	0.648	17.4
	12.5	59.6	75.89	3,900	2,490	7.17	5.73	390	332	490	402	5,290	553	0.646	16.8
250 x 100	5.0	26.0	33.14	2,520	604	8.72	4.27	202	121	256	135	1,630	217	0.679	38.4
	6.0	30.9	39.32	2,940	702	8.65	4.22	236	140	301	158	1,910	253	0.674	32.4
	8.0	40.2	51.24	3,720	875	8.52	4.13	297	175	385	201	2,440	317	0.666	24.9
	9.0	44.7	56.98	4,060	951	8.44	4.09	325	190	425	221	2,680	346	0.661	22.4
	10.0	49.1	62.57	4,390	1,020	8.37	4.04	351	204	462	240	2,910	373	0.657	20.4
	12.0	57.5	73.30	4,960	1,140	8.23	3.95	397	228	531	275	3,320	421	0.648	17.4
225 x 175	4.0	24.2	30.81	2,320	1,590	8.68	7.17	206	181	243	205	2,960	290	0.783	41.3
	5.0	29.9	38.14	2,840	1,940	8.63	7.12	252	221	298	252	3,650	355	0.779	33.4
	6.0	35.6	45.32	3,330	2,270	8.57	7.08	296	259	352	297	4,330	418	0.774	28.1
250 x 150	4.0	24.2	30.81	2,680	1,230	9.32	6.31	214	164	258	182	2,670	275	0.783	41.3
	5.0	29.9	38.14	3,270	1,500	9.26	6.26	262	199	317	224	3,300	337	0.779	33.4
	6.0	35.6	45.32	3,840	1,750	9.20	6.22	307	233	374	264	3,900	395	0.774	28.1
	8.0	46.5	59.24	4,890	2,220	9.08	6.12	391	296	482	340	5,050	504	0.766	21.5
	9.0	51.8	65.98	5,370	2,430	9.02	6.07	430	324	533	375	5,600	554	0.761	19.3
	10.0	57.0	72.57	5,830	2,630	8.96	6.02	466	351	582	409	6,120	602	0.757	17.6
	12.0	67.0	85.30	6,660	3,000	8.84	5.93	533	400	674	473	7,110	690	0.748	14.9
	12.5	69.4	88.39	6,850	3,080	8.81	5.90	548	411	695	488	7,340	710	0.746	14.4
300 x 100	4.0	24.2	30.81	3,290	592	10.3	4.38	219	118	281	129	1,670	215	0.783	41.3
	5.0	29.9	38.14	4,020	717	10.3	4.34	268	143	345	159	2,050	262	0.779	33.4
	6.0	35.6	45.32	4,710	835	10.2	4.29	314	167	407	186	2,410	306	0.774	28.1
	8.0	46.5	59.24	5,980	1,040	10.0	4.20	399	209	523	238	3,080	385	0.766	21.5
	9.0	51.8	65.98	6,560	1,140	9.97	4.15	437	228	578	262	3,390	421	0.761	19.3
250 x 200	6.0	40.3	51.32	4,730	3,370	9.60	8.10	378	337	447	385	6,260	538	0.874	24.8
	8.0	52.8	67.24	6,060	4,300	9.49	8.00	485	430	579	498	8,160	691	0.866	18.9
	9.0	58.9	74.98	6,680	4,740	9.44	7.95	534	474	642	551	9,070	763	0.861	17.0
	10.0	64.8	82.57	7,270	5,150	9.38	7.90	581	515	702	603	9,950	832	0.857	15.4
	12.0	76.4	97.30	8,360	5,920	9.27	7.80	669	592	817	701	11,600	961	0.848	13.1
	12.5	79.2	100.9	8,620	6,100	9.24	7.78	689	610	844	725	12,000	991	0.846	12.6
300 x 150	6.0	40.3	51.32	6,000	2,060	10.8	6.34	400	275	495	307	5,010	478	0.874	24.8
	8.0	52.8	67.24	7,680	2,620	10.7	6.25	512	350	640	396	6,490	612	0.866	18.9
	9.0	58.9	74.98	8,470	2,880	10.6	6.20	564	384	709	439	7,200	674	0.861	17.0
	10.0	64.8	82.57	9,210	3,130	10.6	6.15	614	417	776	479	7,880	733	0.857	15.4
	12.0	76.4	97.30	10,600	3,570	10.4	6.06	706	476	902	556	9,170	842	0.848	13.1
	12.5	79.2	100.9	10,900	3,670	10.4	6.03	727	490	932	574	9,470	868	0.846	12.6
300 x 200	6.0	45.0	57.32	7,300	3,930	11.3	8.28	487	393	583	443	8,140	651	0.974	22.2
	8.0	59.1	75.24	9,390	5,040	11.2	8.19	626	504	757	574	10,600	838	0.966	16.9
	9.0	65.9	83.98	10,400	5,560	11.1	8.14	692	556	840	637	11,800	927	0.961	15.2
	10.0	72.7	92.57	11,300	6,060	11.1	8.09	754	606	921	698	13,000	1,010	0.957	13.8
	12.0	85.8	109.3	13,100	6,980	10.9	7.99	872	698	1,070	814	15,200	1,170	0.948	11.7
	12.5	89.0	113.4	13,500	7,200	10.9	7.97	900	720	1,110	842	15,800	1,210	0.946	11.2
350 x 150	6.0	45.0	57.32	8,810	2,370	12.4	6.43	504	316	631	350	6,140	561	0.974	22.2
	8.0	59.1	75.24	11,300	3,030	12.3	6.34	647	404	818	453	7,970	719	0.966	16.9
	9.0	65.9	83.98	12,500	3,330	12.2	6.30	714	444	908	502	8,840	793	0.961	15.2
	10.0	72.7	92.57	13,600	3,620	12.1	6.25	779	482	995	549	9,680	864	0.957	13.8
	12.0	85.8	109.3	15,700	4,140	12.0	6.16	899	552	1,160	638	11,300	995	0.948	11.7
	12.5	89.0	113.4	16,200	4,270	12.0	6.13	927	569	1,200	660	11,700	1,030	0.946	11.2

Section properties Rectangular : 350 mm x 250 mm to 600 mm x 300 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
350 x 250	6.0	54.4	69.32	12,400	7,410	13.4	10.3	706	593	837	667	14,600	966	1.17	18.4
	8.0	71.6	91.24	16,000	9,570	13.2	10.2	914	766	1,090	869	19,100	1,250	1.17	14.0
	9.0	80.1	102.0	17,700	10,600	13.2	10.2	1,010	848	1,210	967	21,300	1,390	1.16	12.5
	10.0	88.4	112.6	19,400	11,600	13.1	10.1	1,110	927	1,330	1,060	23,500	1,520	1.16	11.3
	12.0	105	133.3	22,600	13,500	13.0	10.0	1,290	1,080	1,570	1,240	27,700	1,780	1.15	9.56
	12.5	109	138.4	23,300	13,900	13.0	10.0	1,330	1,110	1,620	1,290	28,700	1,840	1.15	9.21
	16.0	136	173.0	28,300	16,800	12.8	9.85	1,620	1,340	1,990	1,580	35,500	2,230	1.13	7.36
400 x 200	6.0	54.4	69.32	14,700	5,060	14.5	8.54	733	506	900	559	12,100	877	1.17	18.4
	8.0	71.6	91.24	19,000	6,520	14.4	8.45	949	652	1,170	728	15,800	1,130	1.17	14.0
	9.0	80.1	102.0	21,000	7,200	14.4	8.40	1,050	720	1,310	809	17,600	1,260	1.16	12.5
	10.0	88.4	112.6	23,000	7,860	14.3	8.36	1,150	786	1,430	888	19,400	1,370	1.16	11.3
	12.0	105	133.3	26,800	9,110	14.2	8.27	1,340	911	1,680	1,040	22,700	1,600	1.15	9.56
	12.5	109	138.4	27,700	9,400	14.1	8.24	1,380	940	1,740	1,080	23,600	1,650	1.15	9.21
400 x 300	9.0	94.2	120.0	27,900	18,000	15.3	12.2	1,400	1,200	1,660	1,360	34,800	1,940	1.36	10.6
	10.0	104	132.6	30,600	19,700	15.2	12.2	1,530	1,320	1,820	1,500	38,400	2,130	1.36	9.61
	12.0	123	157.3	35,800	23,000	15.1	12.1	1,790	1,540	2,150	1,770	45,400	2,500	1.35	8.10
	12.5	128	163.4	37,000	23,800	15.1	12.1	1,850	1,590	2,230	1,830	47,100	2,590	1.35	7.80
	16.0	161	205.0	45,300	29,000	14.9	11.9	2,260	1,940	2,750	2,260	58,600	3,170	1.33	6.21
500 x 300	12.0	142	181.3	61,400	28,000	18.4	12.4	2,460	1,870	2,990	2,110	62,400	3,160	1.55	7.03
	12.5	148	188.4	63,600	29,000	18.4	12.4	2,540	1,930	3,100	2,190	64,800	3,270	1.55	6.76
	16.0	186	237.0	78,200	35,500	18.2	12.2	3,130	2,370	3,860	2,720	80,800	4,030	1.53	5.38
600 x 300	12.0	161	205.3	96,100	33,000	21.6	12.7	3,200	2,200	3,960	2,460	80,100	3,820	1.75	6.21
	12.5	168	213.4	99,600	34,200	21.6	12.7	3,320	2,280	4,110	2,550	83,100	3,960	1.75	5.97
	16.0	211	269.0	123,000	42,000	21.4	12.5	4,100	2,800	5,120	3,170	104,000	4,890	1.73	4.74
	19.0	247	315.2	142,000	48,100	21.2	12.4	4,720	3,210	5,940	3,670	121,000	5,630	1.72	4.04

JIS G 3466

JIS G 3466 “Carbon steel square and rectangular tubes for general structure”

Mechanical properties and chemical composition

Refer to page 7-8.

Tolerances

The tolerances on dimensions are established in accordance with standard JIS G 3466.

Characteristics	Tolerances	
Outside dimensions of side	(H,B≦100mm)	±1.5mm
H : Longest side	(100mm＜H,B)	±1.5%
B : Shortest side		
Wall thickness(T)	(T＜3mm)	±0.3mm
	(3mm≦T)	±10% in thickness
Unevenness of the flat portions of each side	(H,B≦100mm)	±0.5mm
	(100mm＜H,B)	±0.5%
Squareness of sides	90°±1.5°	
Corner dimension(S)	S≦3T	
Straightness	0.3% in total length	
Length	0, +50mm (Private standard tolerance)	

NOTE

1)The outside dimensions are measured across the flats at positions at least 50mm from the end of the HSS.

Packing

In bare bundle (steel banded) or in bulk. Standard lengths are 6, 8 and 12 meter.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.
a)Manufacturer's Name b)Standard & Grade c)Size d)Manufacturing Date e)Heat No.
f)Country of Origin

Inspection and Testing

JIS G 3466 is subject to tensile testing in accordance with JIS Z 2241.
The general matters of inspection shall be in accordance with JIS G 0404.

If you need additional requirements, please consult us.

Available size range

Dimensions (mm-size)

Size(mm)		Wall thickness(mm)									
SQUARE	RECTANGULAR	1.6	2.3	3.2	4.5	6.0	9.0	12.0	16.0	19.0	22.0
	60 x 30	●▲	●▲	●▲	●						
50 x 50		●▲	●▲	●▲	●▲	●▲					
	60 x 40	●▲	●▲	●▲							
	70 x 40	●▲	●▲	●▲	●▲						
60 x 60		●▲	●▲	●▲	●▲	●▲					
	75 x 45	●▲	●▲	●▲	●▲	●▲					
	75 x 50		●▲	●▲	●▲	●▲					
	100 x 40	●▲	●▲	●▲	●						
75 x 75		●	●▲	●▲	●▲	●▲	●				
	100 x 50	●	●▲	●▲	●▲	●▲					
80 x 80		●	●▲	●▲	●▲	●▲					
	125 x 40	●▲	●▲	●▲							
90 x 90			●▲	●▲	●▲	●▲					
100 x 100		●	●▲	●▲	●▲	●▲	●▲	●			
	125 x 75		●▲	●▲	●▲	●▲					
	150 x 50		●▲	●▲	●▲	●▲					
	150 x 75			●▲	●▲	●▲	●▲				
	150 x 80			●▲	●▲	●▲					
120 x 120						●▲	●▲	●			
125 x 125			●	●▲	●▲	●▲	●▲	●▲			
	150 x 100		●	●▲	●▲	●▲	●▲	●			
150 x 150				●	●▲	●▲	●▲	●▲			
	175 x 125				●▲	●▲	●▲	●			
	200 x 100			●	●▲	●▲	●▲	●			
175 x 175					●▲	●▲	●▲	●▲			
	200 x 150				●▲	●▲	●▲	●▲			
	250 x 100				●	●▲	●▲	●			
200 x 200					●▲	●▲	●▲	●▲	●		
	225 x 175				●	●▲					
	250 x 150				●▲	●▲	●▲	●▲			
	300 x 100				●	●▲	●▲				
	250 x 200					●▲	●▲	●▲			
	300 x 150					●▲	●▲	●▲			
250 x 250						●▲	●▲	●▲	●▲	●	
	300 x 200					●▲	●▲	●▲	●		
	350 x 150					●▲	●▲	●▲			
300 x 300						●▲	●▲	●▲	●▲	●▲	
	350 x 250					●▲	●▲	●▲	●▲		
	400 x 200					●▲	●▲	●▲			
350 x 350							●▲	●▲	●▲	●▲	●▲
	400 x 300						●▲	●▲	●		
400 x 400							●▲	●▲	●▲	●▲	●▲
	500 x 300							●▲	●▲	●▲	
450 x 450							●▲	●▲	●▲	●▲	
	600 x 300							●▲	●▲	●▲	
500 x 500							●▲	●▲	●▲	●▲	●▲
550 x 550									●▲	●▲	●▲

● STKR400 available
▲ STKR490 available
If you require other sizes, please consult us.

JIS G 3466

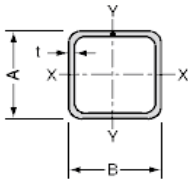
Section properties Square : 50 mm x 50 mm to 120 mm x 120 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
50 x 50	1.6	2.38	3.032	11.7	11.7	1.96	1.96	4.68	4.68	5.46	5.46	18.5	7.03	0.195	420
	2.0	2.93	3.737	14.1	14.1	1.95	1.95	5.66	5.66	6.66	6.66	22.6	8.51	0.193	341
	2.3	3.34	4.252	15.9	15.9	1.93	1.93	6.34	6.34	7.52	7.52	25.6	9.55	0.192	300
	2.5	3.60	4.589	16.9	16.9	1.92	1.92	6.78	6.78	8.07	8.07	27.5	10.2	0.191	278
	3.0	4.25	5.408	19.5	19.5	1.90	1.90	7.79	7.79	9.39	9.39	32.1	11.8	0.190	236
	3.2	4.50	5.727	20.4	20.4	1.89	1.89	8.16	8.16	9.89	9.89	33.9	12.3	0.189	222
	4.0	5.45	6.948	23.7	23.7	1.85	1.85	9.49	9.49	11.7	11.7	40.4	14.4	0.186	183
	4.5	6.02	7.669	25.5	25.5	1.82	1.82	10.2	10.2	12.8	12.8	44.1	15.6	0.185	166
	5.0	6.56	8.356	27.0	27.0	1.80	1.80	10.8	10.8	13.7	13.7	47.5	16.6	0.183	152
	6.0	7.56	9.633	29.5	29.5	1.75	1.75	11.8	11.8	15.3	15.3	53.2	18.2	0.179	132
60 x 60	1.6	2.88	3.672	20.7	20.7	2.37	2.37	6.89	6.89	7.99	7.99	32.4	10.4	0.235	347
	2.0	3.56	4.537	25.1	25.1	2.35	2.35	8.38	8.38	9.79	9.79	39.8	12.6	0.233	281
	2.3	4.06	5.172	28.3	28.3	2.34	2.34	9.44	9.44	11.1	11.1	45.2	14.2	0.232	246
	2.5	4.39	5.589	30.3	30.3	2.33	2.33	10.1	10.1	11.9	11.9	48.7	15.2	0.231	228
	3.0	5.19	6.608	35.1	35.1	2.31	2.31	11.7	11.7	14.0	14.0	57.1	17.7	0.230	193
	3.2	5.50	7.007	36.9	36.9	2.30	2.30	12.3	12.3	14.7	14.7	60.3	18.6	0.229	182
	4.0	6.71	8.548	43.6	43.6	2.26	2.26	14.5	14.5	17.6	17.6	72.6	22.0	0.226	149
	4.5	7.43	9.469	47.2	47.2	2.23	2.23	15.7	15.7	19.3	19.3	79.8	23.9	0.225	135
	5.0	8.13	10.36	50.5	50.5	2.21	2.21	16.8	16.8	20.9	20.9	86.4	25.6	0.223	123
	6.0	9.45	12.03	56.1	56.1	2.16	2.16	18.7	18.7	23.7	23.7	98.4	28.6	0.219	106
75 x 75	1.6	3.64	4.632	41.3	41.3	2.99	2.99	11.0	11.0	12.7	12.7	64.1	16.5	0.295	275
	2.0	4.50	5.737	50.5	50.5	2.97	2.97	13.5	13.5	15.6	15.6	79.0	20.2	0.293	222
	2.3	5.14	6.552	57.1	57.1	2.95	2.95	15.2	15.2	17.7	17.7	90.0	22.9	0.292	194
	2.5	5.57	7.089	61.4	61.4	2.94	2.94	16.4	16.4	19.1	19.1	97.1	24.6	0.291	180
	3.0	6.60	8.408	71.6	71.6	2.92	2.92	19.1	19.1	22.5	22.5	115	28.7	0.290	152
	3.2	7.01	8.927	75.5	75.5	2.91	2.91	20.1	20.1	23.8	23.8	121	30.3	0.289	143
	4.0	8.59	10.95	90.2	90.2	2.87	2.87	24.1	24.1	28.8	28.8	147	36.3	0.286	116
	4.5	9.55	12.17	98.6	98.6	2.85	2.85	26.3	26.3	31.7	31.7	163	39.7	0.285	105
	5.0	10.5	13.36	106	106	2.82	2.82	28.4	28.4	34.5	34.5	177	42.9	0.283	95.4
	6.0	12.3	15.63	120	120	2.77	2.77	32.0	32.0	39.6	39.6	205	48.7	0.279	81.5
	6.3	12.8	16.29	124	124	2.76	2.76	33.0	33.0	41.0	41.0	212	50.3	0.278	78.2
	8.0	15.5	19.79	141	141	2.67	2.67	37.7	37.7	48.2	48.2	251	57.9	0.273	64.4
80 x 80	1.6	3.89	4.952	50.4	50.4	3.19	3.19	12.6	12.6	14.5	14.5	78.0	18.9	0.315	257
	2.0	4.82	6.137	61.7	61.7	3.17	3.17	15.4	15.4	17.8	17.8	96.3	23.2	0.313	208
	2.3	5.51	7.012	69.9	69.9	3.16	3.16	17.5	17.5	20.3	20.3	110	26.2	0.312	182
	2.5	5.96	7.589	75.1	75.1	3.15	3.15	18.8	18.8	21.9	21.9	119	28.2	0.311	168
	3.0	7.07	9.008	87.8	87.8	3.12	3.12	22.0	22.0	25.8	25.8	140	33.0	0.310	141
	3.2	7.51	9.567	92.7	92.7	3.11	3.11	23.2	23.2	27.3	27.3	148	34.9	0.309	133
	4.0	9.22	11.75	111	111	3.07	3.07	27.8	27.8	33.1	33.1	180	41.8	0.306	108
	4.5	10.3	13.07	122	122	3.05	3.05	30.4	30.4	36.5	36.5	200	45.9	0.305	97.5
	5.0	11.3	14.36	131	131	3.03	3.03	32.9	32.9	39.7	39.7	218	49.7	0.303	88.7
	6.0	13.2	16.83	149	149	2.98	2.98	37.3	37.3	45.8	45.8	252	56.6	0.299	75.7
	6.3	13.8	17.55	154	154	2.96	2.96	38.5	38.5	47.5	47.5	262	58.5	0.298	72.6
	8.0	16.8	21.39	177	177	2.88	2.88	44.3	44.3	56.1	56.1	311	67.8	0.293	59.6
90 x 90	2.3	6.23	7.932	101	101	3.56	3.56	22.4	22.4	25.9	25.9	158	33.6	0.352	161
	2.5	6.74	8.589	109	109	3.56	3.56	24.1	24.1	28.0	28.0	170	36.2	0.351	148
	3.0	8.01	10.21	127	127	3.53	3.53	28.3	28.3	33.0	33.0	201	42.5	0.350	125
	3.2	8.52	10.85	135	135	3.52	3.52	29.9	29.9	35.0	35.0	214	44.9	0.349	117
	4.0	10.5	13.35	162	162	3.48	3.48	36.0	36.0	42.6	42.6	261	54.2	0.346	95.4
	4.5	11.7	14.87	178	178	3.46	3.46	39.5	39.5	47.1	47.1	289	59.6	0.345	85.7
	5.0	12.8	16.36	193	193	3.43	3.43	42.9	42.9	51.4	51.4	316	64.7	0.343	77.9
	6.0	15.1	19.23	220	220	3.39	3.39	49.0	49.0	59.5	59.5	368	74.2	0.339	66.2
	6.3	15.8	20.07	228	228	3.37	3.37	50.7	50.7	61.9	61.9	382	76.8	0.338	63.5
100 x 100	1.6	4.89	6.232	100	100	4.01	4.01	20.0	20.0	22.9	22.9	154	30.0	0.395	204
	2.0	6.07	7.737	123	123	3.99	3.99	24.6	24.6	28.3	28.3	191	36.9	0.393	165
	2.3	6.95	8.852	140	140	3.97	3.97	27.9	27.9	32.3	32.3	217	41.9	0.392	144
	2.5	7.53	9.589	151	151	3.96	3.96	30.1	30.1	34.9	34.9	235	45.2	0.391	133
	3.0	8.96	11.41	177	177	3.94	3.94	35.4	35.4	41.2	41.2	279	53.2	0.390	112
	3.2	9.52	12.13	187	187	3.93	3.93	37.5	37.5	43.7	43.7	296	56.3	0.389	105
	4.0	11.7	14.95	226	226	3.89	3.89	45.3	45.3	53.3	53.3	362	68.1	0.386	85.2
	4.5	13.1	16.67	249	249	3.87	3.87	49.9	49.9	59.0	59.0	402	75.1	0.385	76.4
	5.0	14.4	18.36	271	271	3.84	3.84	54.2	54.2	64.6	64.6	441	81.7	0.383	69.4
	6.0	17.0	21.63	311	311	3.79	3.79	62.3	62.3	75.1	75.1	514	94.1	0.379	58.9
	6.3	17.7	22.59	323	323	3.78	3.78	64.6	64.6	78.1	78.1	535	97.6	0.378	56.4
	8.0	21.8	27.79	380	380	3.70	3.70	76.0	76.0	93.8	93.8	647	115	0.373	45.8
	9.0	24.1	30.67	408	408	3.65	3.65	81.6	81.6	102	102	706	124	0.369	41.5
	10.0	26.2	33.43	433	433	3.60	3.60	86.5	86.5	110	110	759	132	0.366	38.1
	12.0	30.3	38.53	471	471	3.50	3.50	94.3	94.3	123	123	852	146	0.359	33.1
120 x 120	6.0	20.8	26.43	562	562	4.61	4.61	93.7	93.7	112	112	913	141	0.459	48.2
	6.3	21.7	27.63	584	584	4.60	4.60	97.3	97.3	116	116	953	147	0.458	46.1
	8.0	26.8	34.19	697	697	4.51	4.51	116	116	141	141	1,160	176	0.453	37.3
	9.0	29.7	37.87	755	755	4.47	4.47	126	126	155	155	1,280	191	0.449	33.6
	10.0	32.5	41.43	808	808	4.42	4.42	135	135	167	167	1,380	205	0.446	30.8
	12.0	37.8	48.13	897	897	4.32	4.32	150	150	189	189	1,570	229	0.439	26.5

NOTE

The calculation of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
nominal	1.0T	2.0T



Section properties Square : 125 mm x 125 mm to 350 mm x 350 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
125 x 125	2.3	8.75	11.15	278	278	4.99	4.99	44.5	44.5	51.1	51.1	430	66.8	0.492	114
	2.5	9.49	12.09	300	300	4.98	4.98	48.1	48.1	55.3	55.3	465	72.1	0.491	105
	3.0	11.3	14.41	355	355	4.96	4.96	56.7	56.7	65.6	65.6	553	85.1	0.490	88.4
	3.2	12.0	15.33	376	376	4.95	4.95	60.1	60.1	69.6	69.6	587	90.2	0.489	83.1
	4.0	14.9	18.95	457	457	4.91	4.91	73.2	73.2	85.3	85.3	722	110	0.486	67.2
	4.5	16.6	21.17	506	506	4.89	4.89	80.9	80.9	94.8	94.8	804	122	0.485	60.2
	5.0	18.3	23.36	553	553	4.86	4.86	88.4	88.4	104	104	884	133	0.483	54.5
	6.0	21.7	27.63	641	641	4.82	4.82	103	103	122	122	1,040	154	0.479	46.1
	6.3	22.7	28.89	666	666	4.80	4.80	107	107	127	127	1,080	161	0.478	44.1
	8.0	28.1	35.79	797	797	4.72	4.72	128	128	154	154	1,320	193	0.473	35.6
	9.0	31.1	39.67	865	865	4.67	4.67	138	138	169	169	1,460	210	0.469	32.1
	10.0	34.1	43.43	927	927	4.62	4.62	148	148	183	183	1,580	225	0.466	29.3
	12.0	39.7	50.53	1,030	1,030	4.52	4.52	165	165	208	208	1,800	253	0.459	25.2
	12.5	41.0	52.23	1,060	1,060	4.50	4.50	169	169	214	214	1,850	259	0.457	24.4
150 x 150	3.2	14.5	18.53	661	661	5.97	5.97	88.1	88.1	101	101	1,030	132	0.589	68.8
	4.0	18.0	22.95	808	808	5.93	5.93	108	108	125	125	1,260	162	0.586	55.5
	4.5	20.2	25.67	896	896	5.91	5.91	120	120	139	139	1,410	180	0.585	49.6
	5.0	22.3	28.36	982	982	5.89	5.89	131	131	153	153	1,550	197	0.583	44.9
	6.0	26.4	33.63	1,150	1,150	5.84	5.84	153	153	180	180	1,830	230	0.579	37.9
	6.3	27.6	35.19	1,190	1,190	5.82	5.82	159	159	188	188	1,910	239	0.578	36.2
	8.0	34.4	43.79	1,440	1,440	5.74	5.74	192	192	230	230	2,360	290	0.573	29.1
	9.0	38.2	48.67	1,580	1,580	5.69	5.69	210	210	253	253	2,600	318	0.569	26.2
	10.0	41.9	53.43	1,700	1,700	5.64	5.64	227	227	276	276	2,840	343	0.566	23.8
	12.0	49.1	62.53	1,920	1,920	5.54	5.54	256	256	317	317	3,270	390	0.559	20.4
	12.5	50.8	64.73	1,970	1,970	5.52	5.52	263	263	326	326	3,380	400	0.557	19.7
175 x 175	4.5	23.7	30.17	1,450	1,450	6.93	6.93	166	166	192	192	2,260	249	0.685	42.2
	5.0	26.2	33.36	1,590	1,590	6.91	6.91	182	182	211	211	2,500	273	0.683	38.2
	6.0	31.1	39.63	1,860	1,860	6.86	6.86	213	213	249	249	2,950	320	0.679	32.1
	6.3	32.6	41.49	1,940	1,940	6.84	6.84	222	222	260	260	3,090	334	0.678	30.7
	8.0	40.7	51.79	2,370	2,370	6.76	6.76	271	271	321	321	3,820	408	0.673	24.6
	9.0	45.3	57.67	2,600	2,600	6.71	6.71	297	297	354	354	4,230	448	0.669	22.1
	10.0	49.8	63.43	2,820	2,820	6.66	6.66	322	322	387	387	4,630	486	0.666	20.1
	12.0	58.5	74.53	3,210	3,210	6.57	6.57	367	367	447	447	5,380	556	0.659	17.1
	12.5	60.6	77.23	3,310	3,310	6.54	6.54	378	378	462	462	5,560	573	0.657	16.5
200 x 200	4.5	27.2	34.67	2,190	2,190	7.95	7.95	219	219	253	253	3,410	329	0.785	36.7
	5.0	30.1	38.36	2,410	2,410	7.93	7.93	241	241	279	279	3,760	362	0.783	33.2
	6.0	35.8	45.63	2,830	2,830	7.88	7.88	283	283	330	330	4,460	426	0.779	27.9
	6.3	37.5	47.79	2,960	2,960	7.86	7.86	296	296	345	345	4,660	444	0.778	26.7
	8.0	46.9	59.79	3,620	3,620	7.78	7.78	362	362	426	426	5,790	545	0.773	21.3
	9.0	52.3	66.67	3,990	3,990	7.73	7.73	399	399	472	472	6,430	601	0.769	19.1
	10.0	57.6	73.43	4,340	4,340	7.69	7.69	434	434	517	517	7,050	654	0.766	17.3
	12.0	67.9	86.53	4,980	4,980	7.59	7.59	498	498	601	601	8,230	753	0.759	14.7
	12.5	70.4	89.73	5,130	5,130	7.56	7.56	513	513	621	621	8,510	776	0.757	14.2
	16.0	87.3	111.2	6,080	6,080	7.39	7.39	608	608	751	751	10,300	924	0.745	11.5
250 x 250	6.0	45.2	57.63	5,670	5,670	9.92	9.92	454	454	524	524	8,840	681	0.979	22.1
	6.3	47.4	60.39	5,930	5,930	9.91	9.91	474	474	549	549	9,260	712	0.978	21.1
	8.0	59.5	75.79	7,320	7,320	9.82	9.82	585	585	683	683	11,600	879	0.973	16.8
	9.0	66.5	84.67	8,090	8,090	9.78	9.78	647	647	759	759	12,900	973	0.969	15.0
	10.0	73.3	93.43	8,840	8,840	9.73	9.73	707	707	833	833	14,100	1,060	0.966	13.6
	12.0	86.8	110.5	10,300	10,300	9.63	9.63	820	820	975	975	16,600	1,240	0.959	11.5
	12.5	90.1	114.7	10,600	10,600	9.61	9.61	847	847	1,010	1,010	17,200	1,280	0.957	11.1
	16.0	112	143.2	12,800	12,800	9.44	9.44	1,020	1,020	1,240	1,240	21,200	1,540	0.945	8.90
	19.0	131	166.3	14,400	14,400	9.29	9.29	1,150	1,150	1,410	1,410	24,300	1,740	0.935	7.66
300 x 300	6.0	54.7	69.63	9,960	9,960	12.0	12.0	664	664	764	764	15,400	997	1.18	18.3
	6.3	57.3	72.99	10,400	10,400	11.9	11.9	695	695	800	800	16,200	1,040	1.18	17.5
	8.0	72.1	91.79	12,900	12,900	11.9	11.9	862	862	999	999	20,200	1,290	1.17	13.9
	9.0	80.6	102.7	14,300	14,300	11.8	11.8	956	956	1,110	1,110	22,600	1,440	1.17	12.4
	10.0	89.0	113.4	15,700	15,700	11.8	11.8	1,050	1,050	1,220	1,220	24,900	1,570	1.17	11.2
	12.0	106	134.5	18,300	18,300	11.7	11.7	1,220	1,220	1,440	1,440	29,300	1,840	1.16	9.47
	12.5	110	139.7	19,000	19,000	11.6	11.6	1,260	1,260	1,490	1,490	30,400	1,900	1.16	9.12
	16.0	138	175.2	23,100	23,100	11.5	11.5	1,540	1,540	1,840	1,840	37,700	2,320	1.15	7.27
	19.0	160	204.3	26,200	26,200	11.3	11.3	1,750	1,750	2,120	2,120	43,500	2,650	1.13	6.24
350 x 350	9.0	94.7	120.7	23,200	23,200	13.9	13.9	1,320	1,320	1,530	1,530	36,200	1,990	1.37	10.6
	10.0	105	133.4	25,500	25,500	13.8	13.8	1,450	1,450	1,690	1,690	40,000	2,180	1.37	9.55
	12.0	124	158.5	29,800	29,800	13.7	13.7	1,700	1,700	1,990	1,990	47,300	2,560	1.36	8.04
	12.5	129	164.7	30,900	30,900	13.7	13.7	1,760	1,760	2,070	2,070	49,100	2,650	1.36	7.73
	16.0	163	207.2	37,900	37,900	13.5	13.5	2,160	2,160	2,570	2,570	61,100	3,260	1.35	6.15
	19.0	190	242.3	43,400	43,400	13.4	13.4	2,480	2,480	2,970	2,970	70,900	3,740	1.33	5.26
	22.0	217	276.2	48,400	48,400	13.2	13.2	2,760	2,760	3,340	3,340	80,200	4,180	1.32	4.61

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Section properties Square : 400 mm x 400 mm to 550 mm x 550 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
400 x 400	9.0	109	138.7	35,100	35,100	15.9	15.9	1,750	1,750	2,020	2,020	54,500	2,630	1.57	9.19
	10.0	120	153.4	38,600	38,600	15.9	15.9	1,930	1,930	2,230	2,230	60,200	2,890	1.57	8.30
	12.0	143	182.5	45,300	45,300	15.8	15.8	2,270	2,270	2,640	2,640	71,300	3,400	1.56	6.98
	12.5	149	189.7	47,000	47,000	15.7	15.7	2,350	2,350	2,740	2,740	74,100	3,530	1.56	6.71
	16.0	188	239.2	57,900	57,900	15.6	15.6	2,900	2,900	3,410	3,410	92,700	4,360	1.55	5.33
	19.0	220	280.3	66,600	66,600	15.4	15.4	3,330	3,330	3,960	3,960	108,000	5,020	1.53	4.55
	22.0	251	320.2	74,700	74,700	15.3	15.3	3,740	3,740	4,480	4,480	122,000	5,640	1.52	3.98
450 x 450	9.0	123	156.7	50,400	50,400	17.9	17.9	2,240	2,240	2,580	2,580	78,100	3,360	1.77	8.13
	10.0	136	173.4	55,500	55,500	17.9	17.9	2,470	2,470	2,850	2,850	86,300	3,700	1.77	7.35
	12.0	162	206.5	65,400	65,400	17.8	17.8	2,910	2,910	3,370	3,370	102,000	4,370	1.76	6.17
	12.5	169	214.7	67,800	67,800	17.8	17.8	3,020	3,020	3,500	3,500	106,000	4,530	1.76	5.93
	16.0	213	271.2	84,100	84,100	17.6	17.6	3,740	3,740	4,380	4,380	134,000	5,620	1.75	4.70
	19.0	250	318.3	97,100	97,100	17.5	17.5	4,310	4,310	5,090	5,090	156,000	6,490	1.73	4.00
	22.0	286	364.2	109,000	109,000	17.3	17.3	4,850	4,850	5,780	5,780	177,000	7,310	1.72	3.50
500 x 500	9.0	137	174.7	69,800	69,800	20.0	20.0	2,790	2,790	3,200	3,200	108,000	4,190	1.97	7.29
	10.0	152	193.4	76,900	76,900	19.9	19.9	3,080	3,080	3,540	3,540	119,000	4,610	1.97	6.59
	12.0	181	230.5	90,800	90,800	19.8	19.8	3,630	3,630	4,200	4,200	141,000	5,450	1.96	5.53
	12.5	188	239.7	94,100	94,100	19.8	19.8	3,770	3,770	4,360	4,360	147,000	5,650	1.96	5.31
	16.0	238	303.2	117,000	117,000	19.6	19.6	4,680	4,680	5,460	5,460	185,000	7,030	1.95	4.20
	19.0	280	356.3	136,000	136,000	19.5	19.5	5,420	5,420	6,370	6,370	216,000	8,150	1.93	3.58
	22.0	320	408.2	153,000	153,000	19.4	19.4	6,120	6,120	7,240	7,240	246,000	9,210	1.92	3.12
550 x 550	12.0	200	254.5	122,000	122,000	21.9	21.9	4,430	4,430	5,110	5,110	189,000	6,650	2.16	5.00
	12.5	208	264.7	126,000	126,000	21.9	21.9	4,600	4,600	5,310	5,310	197,000	6,900	2.16	4.81
	16.0	263	335.2	158,000	158,000	21.7	21.7	5,730	5,730	6,670	6,670	248,000	8,610	2.15	3.80
	19.0	310	394.3	183,000	183,000	21.5	21.5	6,660	6,660	7,790	7,790	290,000	10,000	2.13	3.23
	22.0	355	452.2	207,000	207,000	21.4	21.4	7,530	7,530	8,870	8,870	331,000	11,300	2.12	2.82

Section properties Rectangular : 60 mm x 30 mm to 75 mm x 50 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
60 x 30	1.6	2.13	2.712	12.5	4.25	2.15	1.25	4.16	2.83	5.19	3.20	10.3	4.90	0.175	470
	2.0	2.62	3.337	15.1	5.08	2.12	1.23	5.02	3.39	6.31	3.89	12.6	5.88	0.173	382
	2.3	2.98	3.792	16.8	5.65	2.11	1.22	5.61	3.76	7.11	4.37	14.1	6.56	0.172	336
	2.5	3.21	4.089	17.9	6.00	2.09	1.21	5.98	4.00	7.62	4.67	15.1	6.98	0.171	312
	3.0	3.77	4.808	20.5	6.80	2.07	1.19	6.84	4.53	8.82	5.39	17.5	7.95	0.170	265
	3.2	3.99	5.087	21.5	7.08	2.05	1.18	7.15	4.72	9.27	5.66	18.4	8.30	0.169	250
	4.0	4.83	6.148	24.7	8.06	2.01	1.14	8.25	5.37	10.9	6.62	21.5	9.52	0.166	207
	4.5	5.31	6.769	26.4	8.53	1.98	1.12	8.80	5.69	11.8	7.14	23.1	10.1	0.165	188
60 x 40	1.6	2.38	3.032	15.2	8.16	2.24	1.64	5.07	4.08	6.12	4.64	16.9	6.72	0.195	420
	2.0	2.93	3.737	18.4	9.83	2.22	1.62	6.14	4.92	7.47	5.65	20.7	8.12	0.193	341
	2.3	3.34	4.252	20.7	11.0	2.20	1.61	6.88	5.50	8.44	6.38	23.4	9.10	0.192	300
	2.5	3.60	4.589	22.1	11.7	2.19	1.60	7.36	5.87	9.06	6.84	25.1	9.72	0.191	278
	3.0	4.25	5.408	25.4	13.4	2.17	1.58	8.46	6.72	10.5	7.94	29.3	11.2	0.190	236
	3.2	4.50	5.727	26.6	14.1	2.16	1.57	8.87	7.03	11.1	8.36	30.9	11.7	0.189	222
	4.0	5.45	6.948	31.0	16.3	2.11	1.53	10.3	8.14	13.2	9.89	36.7	13.7	0.186	183
	4.5	6.02	7.669	33.3	17.4	2.09	1.51	11.1	8.72	14.3	10.7	39.9	14.7	0.185	166
70 x 40	1.6	2.63	3.352	22.1	9.34	2.57	1.67	6.32	4.67	7.72	5.25	21.0	7.90	0.215	380
	2.0	3.25	4.137	26.9	11.3	2.55	1.65	7.67	5.64	9.44	6.41	25.7	9.56	0.213	308
	2.3	3.70	4.712	30.2	12.6	2.53	1.64	8.63	6.32	10.7	7.24	29.1	10.7	0.212	270
	2.5	4.00	5.089	32.3	13.5	2.52	1.63	9.24	6.75	11.5	7.78	31.3	11.5	0.211	250
	3.0	4.72	6.008	37.3	15.5	2.49	1.61	10.7	7.75	13.4	9.05	36.5	13.2	0.210	212
	3.2	5.00	6.367	39.2	16.2	2.48	1.60	11.2	8.12	14.1	9.54	38.5	13.9	0.209	200
	4.0	6.08	7.748	46.0	18.9	2.44	1.56	13.1	9.44	16.8	11.3	45.8	16.2	0.206	164
	4.5	6.73	8.569	49.7	20.3	2.41	1.54	14.2	10.1	18.4	12.3	50.0	17.5	0.205	149
75 x 45	1.6	2.88	3.672	28.4	12.9	2.78	1.88	7.56	5.75	9.16	6.46	28.2	9.63	0.235	347
	2.0	3.56	4.537	34.5	15.7	2.76	1.86	9.20	6.96	11.2	7.90	34.6	11.7	0.233	281
	2.3	4.06	5.172	38.9	17.6	2.74	1.84	10.4	7.82	12.7	8.94	39.3	13.2	0.232	246
	2.5	4.39	5.589	41.7	18.8	2.73	1.84	11.1	8.37	13.7	9.61	42.3	14.1	0.231	228
	3.0	5.19	6.608	48.3	21.7	2.70	1.81	12.9	9.66	16.0	11.2	49.4	16.3	0.230	193
	3.2	5.50	7.007	50.8	22.8	2.69	1.80	13.5	10.1	16.9	11.8	52.2	17.2	0.229	182
	4.0	6.71	8.548	59.9	26.7	2.65	1.77	16.0	11.9	20.2	14.1	62.6	20.2	0.226	149
	4.5	7.43	9.469	65.0	28.9	2.62	1.75	17.3	12.8	22.2	15.5	68.5	21.9	0.225	135
	5.0	8.13	10.36	69.6	30.8	2.59	1.72	18.6	13.7	24.0	16.7	74.0	23.4	0.223	123
	6.0	9.45	12.03	77.3	33.9	2.53	1.68	20.6	15.1	27.2	18.8	83.7	26.0	0.219	106
75 x 50	2.3	4.24	5.402	41.9	22.4	2.79	2.04	11.2	8.96	13.6	10.3	46.9	14.8	0.242	236
	2.5	4.58	5.839	45.0	24.0	2.77	2.03	12.0	9.60	14.6	11.0	50.5	15.9	0.241	218
	3.0	5.42	6.908	52.2	27.8	2.75	2.00	13.9	11.1	17.1	12.9	59.3	18.4	0.240	184
	3.2	5.75	7.327	54.9	29.2	2.74	2.00	14.6	11.7	18.0	13.6	62.6	19.3	0.239	174
	4.0	7.02	8.948	65.0	34.3	2.69	1.96	17.3	13.7	21.7	16.3	75.3	22.9	0.236	142
	4.5	7.79	9.919	70.6	37.2	2.67	1.94	18.8	14.9	23.8	17.9	82.7	24.9	0.235	128
	5.0	8.52	10.86	75.7	39.7	2.64	1.91	20.2	15.9	25.7	19.3	89.5	26.7	0.233	117
	6.0	9.92	12.63	84.5	44.1	2.59	1.87	22.5	17.6	29.2	21.9	102	29.8	0.229	101

Section properties Rectangular : 100 mm x 40 mm to 150 mm x 80 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
100 x 40	1.6	3.39	4.312	53.6	12.9	3.52	1.73	10.7	6.44	13.5	7.10	33.9	11.4	0.275	295
	2.0	4.19	5.337	65.4	15.6	3.50	1.71	13.1	7.81	16.5	8.69	41.5	13.9	0.273	239
	2.3	4.78	6.092	73.9	17.5	3.48	1.70	14.8	8.77	18.8	9.85	47.0	15.6	0.272	209
	2.5	5.17	6.589	79.3	18.8	3.47	1.69	15.9	9.39	20.2	10.6	50.5	16.8	0.271	193
	3.0	6.13	7.808	92.4	21.7	3.44	1.67	18.5	10.8	23.7	12.4	59.0	19.4	0.270	163
	3.2	6.51	8.287	97.3	22.8	3.43	1.66	19.5	11.4	25.1	13.1	62.3	20.4	0.269	154
	4.0	7.97	10.15	116	26.7	3.38	1.62	23.2	13.3	30.3	15.7	74.5	24.0	0.266	126
	4.5	8.85	11.27	126	28.8	3.35	1.60	25.2	14.4	33.3	17.1	81.5	26.1	0.265	113
100 x 50	1.6	3.64	4.632	61.3	21.1	3.64	2.13	12.3	8.43	15.0	9.33	50.1	14.5	0.295	275
	2.0	4.50	5.737	75.0	25.7	3.62	2.12	15.0	10.3	18.5	11.5	61.6	17.7	0.293	222
	2.3	5.14	6.552	84.8	29.0	3.60	2.10	17.0	11.6	21.0	13.0	69.9	20.0	0.292	194
	2.5	5.57	7.089	91.2	31.1	3.59	2.09	18.2	12.4	22.7	14.0	75.4	21.5	0.291	180
	3.0	6.60	8.408	106	36.1	3.56	2.07	21.3	14.4	26.7	16.4	88.6	25.0	0.290	152
	3.2	7.01	8.927	112	38.0	3.55	2.06	22.5	15.2	28.2	17.4	93.7	26.4	0.289	143
	4.0	8.59	10.95	134	44.9	3.50	2.03	26.8	18.0	34.1	20.9	113	31.3	0.286	116
	4.5	9.55	12.17	147	48.9	3.47	2.00	29.3	19.5	37.6	23.0	124	34.2	0.285	105
	5.0	10.5	13.36	158	52.5	3.44	1.98	31.7	21.0	40.8	25.0	135	36.8	0.283	95.4
	6.0	12.3	15.63	179	58.7	3.38	1.94	35.8	23.5	46.9	28.5	154	41.4	0.279	81.5
125 x 40	1.6	4.01	5.112	94.4	15.8	4.30	1.76	15.1	7.91	19.4	8.63	44.9	14.4	0.325	249
	2.0	4.98	6.337	116	19.2	4.27	1.74	18.5	9.61	23.8	10.6	55.1	17.5	0.323	201
	2.3	5.69	7.242	131	21.6	4.25	1.73	20.9	10.8	27.1	12.0	62.4	19.7	0.322	176
	2.5	6.15	7.839	141	23.2	4.24	1.72	22.5	11.6	29.3	12.9	67.1	21.2	0.321	163
	3.0	7.31	9.308	165	26.8	4.21	1.70	26.4	13.4	34.4	15.2	78.5	24.5	0.320	137
	3.2	7.76	9.887	174	28.2	4.19	1.69	27.8	14.1	36.5	16.0	82.8	25.8	0.319	129
	4.0	9.54	12.15	208	33.2	4.14	1.65	33.3	16.6	44.2	19.3	99.2	30.5	0.316	105
	4.5	10.6	13.52	228	36.0	4.11	1.63	36.5	18.0	48.8	21.1	109	33.2	0.315	94.2
125 x 50	1.6	4.26	5.432	107	25.8	4.43	2.18	17.0	10.3	21.3	11.3	67.2	18.3	0.345	235
	2.0	5.29	6.737	131	31.4	4.41	2.16	20.9	12.6	26.3	13.9	82.7	22.3	0.343	189
	2.3	6.05	7.702	148	35.5	4.39	2.15	23.7	14.2	29.9	15.7	93.9	25.3	0.342	165
	2.5	6.55	8.339	160	38.1	4.38	2.14	25.5	15.2	32.3	17.0	101	27.1	0.341	153
	3.0	7.78	9.908	187	44.4	4.34	2.12	29.9	17.7	38.1	20.0	119	31.6	0.340	129
	3.2	8.26	10.53	198	46.7	4.33	2.11	31.6	18.7	40.4	21.1	126	33.4	0.339	121
	4.0	10.2	12.95	238	55.6	4.28	2.07	38.0	22.2	49.0	25.5	152	39.8	0.336	98.4
	4.5	11.3	14.42	261	60.6	4.25	2.05	41.7	24.2	54.2	28.1	167	43.5	0.335	88.4
	5.0	12.5	15.86	283	65.2	4.22	2.03	45.2	26.1	59.1	30.6	182	47.0	0.333	80.3
	6.0	14.6	18.63	322	73.3	4.16	1.98	51.6	29.3	68.3	35.1	209	53.1	0.329	68.4
125 x 75	1.6	4.89	6.232	137	62.8	4.69	3.18	21.9	16.8	26.3	18.6	135	28.0	0.395	204
	2.0	6.07	7.737	169	77.1	4.67	3.16	27.0	20.6	32.5	22.9	167	34.4	0.393	165
	2.3	6.95	8.852	192	87.5	4.65	3.14	30.6	23.3	37.0	26.1	190	39.1	0.392	144
	2.5	7.53	9.589	207	94.2	4.64	3.14	33.0	25.1	40.0	28.2	205	42.1	0.391	133
	3.0	8.96	11.41	243	111	4.61	3.11	38.9	29.5	47.3	33.3	243	49.5	0.390	112
	3.2	9.52	12.13	257	117	4.60	3.10	41.1	31.1	50.1	35.3	258	52.3	0.389	105
	4.0	11.7	14.95	311	141	4.56	3.07	49.7	37.5	61.1	43.0	315	63.1	0.386	85.2
	4.5	13.1	16.67	342	155	4.53	3.04	54.8	41.2	67.7	47.5	349	69.5	0.385	76.4
	5.0	14.4	18.36	373	168	4.51	3.02	59.6	44.7	74.1	52.0	382	75.6	0.383	69.4
	6.0	17.0	21.63	428	192	4.45	2.98	68.6	51.1	86.2	60.3	444	86.7	0.379	58.9
	6.3	17.7	22.59	444	198	4.43	2.96	71.1	52.9	89.6	62.7	462	89.9	0.378	56.4
	8.0	21.8	27.79	523	232	4.34	2.89	83.7	61.8	108	75.0	554	106	0.373	45.8
	9.0	24.1	30.67	562	248	4.28	2.84	90.0	66.1	117	81.4	602	114	0.369	41.5
150 x 50	2.3	6.95	8.852	236	42.0	5.16	2.18	31.4	16.8	40.3	18.5	118	30.5	0.392	144
	2.5	7.53	9.589	254	45.2	5.15	2.17	33.9	18.1	43.5	19.9	128	32.8	0.391	133
	3.0	8.96	11.41	299	52.6	5.12	2.15	39.8	21.1	51.4	23.5	150	38.3	0.390	112
	3.2	9.52	12.13	316	55.5	5.10	2.14	42.1	22.2	54.5	24.9	159	40.4	0.389	105
	4.0	11.7	14.95	381	66.2	5.05	2.10	50.9	26.5	66.5	30.1	192	48.3	0.386	85.2
	4.5	13.1	16.67	420	72.2	5.02	2.08	56.0	28.9	73.6	33.2	212	52.9	0.385	76.4
	5.0	14.4	18.36	456	77.9	4.99	2.06	60.9	31.1	80.5	36.2	230	57.1	0.383	69.4
	6.0	17.0	21.63	524	87.9	4.92	2.02	69.8	35.2	93.5	41.7	264	64.8	0.379	58.9
150 x 75	3.0	10.1	12.91	380	130	5.42	3.17	50.6	34.7	62.5	38.7	312	59.8	0.440	98.7
	3.2	10.8	13.73	402	137	5.41	3.16	53.6	36.6	66.3	41.0	331	63.3	0.439	92.8
	4.0	13.3	16.95	488	166	5.37	3.13	65.1	44.2	81.1	50.1	404	76.6	0.436	75.2
	4.5	14.9	18.92	539	183	5.34	3.11	71.9	48.7	90.0	55.5	448	84.4	0.435	67.3
	5.0	16.4	20.86	588	198	5.31	3.08	78.4	52.9	98.6	60.7	491	91.9	0.433	61.1
	6.0	19.3	24.63	679	228	5.25	3.04	90.6	60.7	115	70.6	572	106	0.429	51.7
	6.3	20.2	25.74	705	236	5.23	3.03	94.0	62.9	120	73.5	595	110	0.428	49.5
	8.0	25.0	31.79	838	277	5.13	2.95	112	73.8	145	88.4	717	130	0.423	40.1
	9.0	27.6	35.17	906	297	5.07	2.91	121	79.2	158	96.3	781	140	0.419	36.2
150 x 80	3.0	10.4	13.21	396	150	5.47	3.37	52.8	37.5	64.7	41.9	349	64.1	0.450	96.4
	3.2	11.0	14.05	419	159	5.46	3.36	55.9	39.7	68.6	44.5	370	67.9	0.449	90.7
	4.0	13.6	17.35	509	192	5.42	3.33	67.9	48.0	84.0	54.4	453	82.3	0.446	73.4
	4.5	15.2	19.37	563	211	5.39	3.30	75.0	52.9	93.2	60.3	502	90.7	0.445	65.8
	5.0	16.8	21.36	614	230	5.36	3.28	81.9	57.5	102	66.0	551	98.9	0.443	59.6
	6.0	19.8	25.23	710	264	5.31	3.24	94.7	66.1	119	76.9	643	114	0.439	50.5

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Section properties Rectangular : 150 mm x 100 mm to 300 mm x 100 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
150 x 100	2.3	8.75	11.15	361	195	5.69	4.18	48.2	38.9	57.3	43.5	395	63.9	0.492	114
	2.5	9.49	12.09	390	210	5.68	4.17	52.0	42.0	62.0	47.0	427	69.0	0.491	105
	3.0	11.3	14.41	461	248	5.65	4.15	61.4	49.5	73.5	55.8	507	81.4	0.490	88.4
	3.2	12.0	15.33	488	262	5.64	4.14	65.1	52.5	78.0	59.2	539	86.2	0.489	83.1
	4.0	14.9	18.95	595	319	5.60	4.10	79.3	63.7	95.7	72.5	662	105	0.486	67.2
	4.5	16.6	21.17	658	352	5.58	4.08	87.8	70.4	106	80.5	736	116	0.485	60.2
	5.0	18.3	23.36	719	384	5.55	4.05	95.9	76.8	117	88.3	809	127	0.483	54.5
	6.0	21.7	27.63	835	444	5.50	4.01	111	88.8	137	103	948	147	0.479	46.1
	6.3	22.7	28.89	868	461	5.48	4.00	116	92.2	142	108	989	153	0.478	44.1
	8.0	28.1	35.79	1,040	549	5.39	3.92	139	110	173	131	1,210	183	0.473	35.6
	9.0	31.1	39.67	1,130	595	5.34	3.87	151	119	190	143	1,320	199	0.469	32.1
	10.0	34.1	43.43	1,210	636	5.28	3.83	161	127	206	155	1,430	213	0.466	29.3
	12.0	39.7	50.53	1,350	705	5.17	3.74	180	141	234	175	1,630	238	0.459	25.2
175 x 125	4.5	20.2	25.67	1,120	669	6.61	5.11	128	107	153	122	1,330	174	0.585	49.6
	5.0	22.3	28.36	1,230	733	6.59	5.08	141	117	169	134	1,460	191	0.583	44.9
	6.0	26.4	33.63	1,440	853	6.53	5.04	164	137	198	158	1,720	222	0.579	37.9
	6.3	27.6	35.19	1,490	888	6.52	5.02	171	142	207	164	1,800	232	0.578	36.2
	8.0	34.4	43.79	1,810	1,070	6.43	4.95	207	171	254	201	2,210	280	0.573	29.1
	9.0	38.2	48.67	1,980	1,170	6.38	4.90	226	187	280	222	2,440	307	0.569	26.2
	10.0	41.9	53.43	2,140	1,260	6.32	4.85	244	201	304	241	2,660	331	0.566	23.8
	12.0	49.1	62.53	2,420	1,420	6.22	4.76	276	227	350	276	3,060	375	0.559	20.4
200 x 100	3.2	14.5	18.53	981	337	7.28	4.27	98.1	67.5	120	74.7	801	116	0.589	68.8
	4.0	18.0	22.95	1,200	411	7.23	4.23	120	82.2	148	91.7	985	142	0.586	55.5
	4.5	20.2	25.67	1,330	455	7.20	4.21	133	90.9	165	102	1,100	157	0.585	49.6
	5.0	22.3	28.36	1,460	497	7.17	4.19	146	99.4	181	112	1,210	172	0.583	44.9
	6.0	26.4	33.63	1,700	577	7.12	4.14	170	115	213	132	1,420	200	0.579	37.9
	6.3	27.6	35.19	1,770	600	7.10	4.13	177	120	223	137	1,480	208	0.578	36.2
	8.0	34.4	43.79	2,150	719	7.00	4.05	215	144	273	167	1,810	251	0.573	29.1
	9.0	38.2	48.67	2,350	782	6.94	4.01	235	156	300	184	1,990	273	0.569	26.2
	10.0	41.9	53.43	2,530	839	6.89	3.96	253	168	327	200	2,160	294	0.566	23.8
	12.0	49.1	62.53	2,860	939	6.77	3.87	286	188	375	228	2,470	331	0.559	20.4
	12.5	50.8	64.73	2,940	961	6.74	3.85	294	192	386	235	2,540	340	0.557	19.7
200 x 150	4.5	23.7	30.17	1,760	1,130	7.64	6.13	176	151	209	172	2,170	243	0.685	42.2
	5.0	26.2	33.36	1,930	1,250	7.62	6.11	193	166	230	189	2,390	267	0.683	38.2
	6.0	31.1	39.63	2,270	1,460	7.57	6.06	227	194	271	223	2,830	313	0.679	32.1
	6.3	32.6	41.49	2,360	1,520	7.55	6.05	236	202	284	233	2,950	326	0.678	30.7
	8.0	40.7	51.79	2,880	1,850	7.46	5.97	288	246	350	287	3,650	398	0.673	24.6
	9.0	45.3	57.67	3,170	2,020	7.41	5.93	317	270	386	317	4,040	437	0.669	22.1
	10.0	49.8	63.43	3,440	2,190	7.36	5.88	344	292	422	346	4,420	474	0.666	20.1
	12.0	58.5	74.53	3,920	2,500	7.26	5.79	392	333	488	399	5,130	542	0.659	17.1
	12.5	60.6	77.23	4,040	2,560	7.23	5.76	404	342	504	412	5,290	557	0.657	16.5
250 x 100	4.5	23.7	30.17	2,330	557	8.78	4.30	186	111	235	124	1,470	198	0.685	42.2
	5.0	26.2	33.36	2,550	610	8.75	4.28	204	122	259	136	1,620	217	0.683	38.2
	6.0	31.1	39.63	2,990	710	8.69	4.23	239	142	305	160	1,900	253	0.679	32.1
	6.3	32.6	41.49	3,120	738	8.67	4.22	250	148	318	167	1,990	264	0.678	30.7
	8.0	40.7	51.79	3,800	889	8.57	4.14	304	178	392	204	2,430	319	0.673	24.6
	9.0	45.3	57.67	4,170	969	8.51	4.10	334	194	433	225	2,680	348	0.669	22.1
	10.0	49.8	63.43	4,520	1,040	8.44	4.05	362	209	473	245	2,910	376	0.666	20.1
	12.0	58.5	74.53	5,160	1,170	8.32	3.97	413	235	547	281	3,340	425	0.659	17.1
225 x 175	4.5	27.2	34.67	2,610	1,780	8.67	7.16	232	203	273	230	3,300	323	0.785	36.7
	5.0	30.1	38.36	2,870	1,950	8.64	7.13	255	223	301	254	3,640	356	0.783	33.2
	6.0	35.8	45.63	3,370	2,290	8.59	7.09	300	262	356	300	4,310	418	0.779	27.9
250 x 150	4.5	27.2	34.67	3,000	1,370	9.31	6.29	240	183	290	205	2,980	306	0.785	36.7
	5.0	30.1	38.36	3,300	1,510	9.28	6.27	264	201	320	225	3,280	337	0.783	33.2
	6.0	35.8	45.63	3,890	1,770	9.23	6.23	311	236	378	266	3,890	396	0.779	27.9
	6.3	37.5	47.79	4,060	1,840	9.21	6.21	324	246	395	278	4,060	413	0.778	26.7
	8.0	46.9	59.79	4,970	2,250	9.12	6.13	398	300	489	344	5,030	505	0.773	21.3
	9.0	52.3	66.67	5,480	2,470	9.07	6.09	438	330	542	380	5,580	556	0.769	19.1
	10.0	57.6	73.43	5,960	2,680	9.01	6.04	477	358	593	416	6,100	604	0.766	17.3
	12.0	67.9	86.53	6,860	3,070	8.90	5.95	548	409	689	482	7,100	694	0.759	14.7
	12.5	70.4	89.73	7,060	3,160	8.87	5.93	565	421	712	498	7,340	715	0.757	14.2
300 x 100	4.5	27.2	34.67	3,700	660	10.3	4.36	246	132	316	145	1,860	239	0.785	36.7
	5.0	30.1	38.36	4,070	723	10.3	4.34	271	145	348	160	2,040	262	0.783	33.2
	6.0	35.8	45.63	4,780	842	10.2	4.30	319	168	411	188	2,400	306	0.779	27.9
	6.3	37.5	47.79	4,980	877	10.2	4.28	332	175	430	196	2,510	319	0.778	26.7
	8.0	46.9	59.79	6,100	1,060	10.1	4.21	407	212	532	241	3,070	386	0.773	21.3
	9.0	52.3	66.67	6,720	1,160	10.0	4.16	448	231	589	266	3,390	423	0.769	19.1

Section properties Rectangular : 250 mm. x 200 mm to 600 mm x 300 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
250 x 200	6.0	40.5	51.63	4,780	3,400	9.62	8.11	382	340	451	388	6,240	538	0.879	24.7
	6.3	42.5	54.09	4,990	3,550	9.61	8.10	399	355	472	406	6,530	562	0.878	23.6
	8.0	53.2	67.79	6,140	4,360	9.52	8.02	492	436	586	503	8,120	692	0.873	18.8
	9.0	59.4	75.67	6,790	4,810	9.47	7.97	543	481	650	558	9,030	765	0.869	16.8
	10.0	65.5	83.43	7,400	5,240	9.42	7.93	592	524	713	612	9,910	834	0.866	15.3
	12.0	77.4	98.53	8,550	6,050	9.32	7.83	684	605	832	714	11,600	965	0.859	12.9
	12.5	80.3	102.2	8,830	6,230	9.29	7.81	706	623	861	738	12,000	996	0.857	12.5
300 x 150	6.0	40.5	51.63	6,070	2,080	10.8	6.35	405	277	500	309	4,990	479	0.879	24.7
	6.3	42.5	54.09	6,340	2,170	10.8	6.33	423	289	523	324	5,220	499	0.878	23.6
	8.0	53.2	67.79	7,810	2,650	10.7	6.26	521	354	649	401	6,470	613	0.873	18.8
	9.0	59.4	75.67	8,620	2,920	10.7	6.21	575	389	720	444	7,170	675	0.869	16.8
	10.0	65.5	83.43	9,410	3,170	10.6	6.17	627	423	789	486	7,860	735	0.866	15.3
	12.0	77.4	98.53	10,900	3,640	10.5	6.08	725	485	921	565	9,150	846	0.859	12.9
	12.5	80.3	102.2	11,200	3,750	10.5	6.06	748	500	952	584	9,460	873	0.857	12.5
300 x 200	6.0	45.2	57.63	7,370	3,960	11.3	8.29	491	396	588	446	8,120	651	0.979	22.1
	6.3	47.4	60.39	7,700	4,140	11.3	8.28	513	414	615	467	8,490	680	0.978	21.1
	8.0	59.5	75.79	9,510	5,100	11.2	8.20	634	510	765	580	10,600	840	0.973	16.8
	9.0	66.5	84.67	10,500	5,630	11.2	8.16	702	563	851	644	11,800	929	0.969	15.0
	10.0	73.3	93.43	11,500	6,140	11.1	8.11	767	614	934	707	12,900	1,010	0.966	13.6
	12.0	86.8	110.5	13,400	7,110	11.0	8.02	891	711	1,090	826	15,200	1,180	0.959	11.5
	12.5	90.1	114.7	13,800	7,330	11.0	8.00	920	733	1,130	855	15,700	1,220	0.957	11.1
	16.0	112	143.2	16,600	8,790	10.8	7.84	1,110	879	1,390	1,050	19,300	1,460	0.945	8.90
350 x 150	6.0	45.2	57.63	8,910	2,390	12.4	6.44	509	319	636	353	6,120	562	0.979	22.1
	6.3	47.4	60.39	9,310	2,490	12.4	6.43	532	333	666	369	6,400	586	0.978	21.1
	8.0	59.5	75.79	11,500	3,060	12.3	6.35	657	408	828	457	7,940	720	0.973	16.8
	9.0	66.5	84.67	12,700	3,370	12.3	6.31	727	449	920	507	8,810	795	0.969	15.0
	10.0	73.3	93.43	13,900	3,660	12.2	6.26	794	489	1,010	556	9,650	866	0.966	13.6
	12.0	86.8	110.5	16,100	4,210	12.1	6.17	921	562	1,180	648	11,300	999	0.959	11.5
	12.5	90.1	114.7	16,600	4,340	12.0	6.15	951	579	1,220	670	11,600	1,030	0.957	11.1
350 x 250	6.0	54.7	69.63	12,500	7,460	13.4	10.3	712	597	843	671	14,600	967	1.18	18.3
	6.3	57.3	72.99	13,000	7,800	13.4	10.3	744	624	882	702	15,200	1010	1.18	17.5
	8.0	72.1	91.79	16,200	9,660	13.3	10.3	924	773	1,100	876	19,100	1,250	1.17	13.9
	9.0	80.6	102.7	17,900	10,700	13.2	10.2	1,030	857	1,230	976	21,300	1,390	1.17	12.4
	10.0	89.0	113.4	19,700	11,700	13.2	10.2	1,120	938	1,350	1,070	23,400	1,520	1.17	11.2
	12.0	106	134.5	23,000	13,700	13.1	10.1	1,310	1,090	1,590	1,260	27,600	1,780	1.16	9.47
	12.5	110	139.7	23,800	14,100	13.0	10.1	1,360	1,130	1,650	1,310	28,600	1,840	1.16	9.12
	16.0	138	175.2	29,000	17,100	12.9	9.89	1,650	1,370	2,030	1,610	35,400	2,240	1.15	7.27
400 x 200	6.0	54.7	69.63	14,800	5,090	14.6	8.55	740	509	906	562	12,100	877	1.18	18.3
	6.3	57.3	72.99	15,500	5,320	14.6	8.54	773	532	948	589	12,600	917	1.18	17.5
	8.0	72.1	91.79	19,200	6,570	14.5	8.46	960	657	1,180	734	15,800	1,130	1.17	13.9
	9.0	80.6	102.7	21,300	7,270	14.4	8.42	1,070	727	1,320	816	17,600	1,260	1.17	12.4
	10.0	89.0	113.4	23,400	7,950	14.3	8.37	1,170	795	1,450	897	19,300	1,380	1.17	11.2
	12.0	106	134.5	27,300	9,230	14.2	8.28	1,360	923	1,710	1,050	22,700	1,600	1.16	9.47
	12.5	110	139.7	28,200	9,540	14.2	8.26	1,410	954	1,770	1,090	23,500	1,650	1.16	9.12
400 x 300	9.0	94.7	120.7	28,200	18,200	15.3	12.3	1,410	1,210	1,670	1,370	34,700	1,940	1.37	10.6
	10.0	105	133.4	31,000	19,900	15.2	12.2	1,550	1,330	1,840	1,510	38,300	2,130	1.37	9.55
	12.0	124	158.5	36,300	23,300	15.1	12.1	1,810	1,550	2,170	1,780	45,200	2,500	1.36	8.04
	12.5	129	164.7	37,600	24,100	15.1	12.1	1,880	1,610	2,250	1,850	46,900	2,590	1.36	7.73
	16.0	163	207.2	46,100	29,500	14.9	11.9	2,310	1,970	2,800	2,300	58,400	3,180	1.35	6.15
500 x 300	12.0	143	182.5	62,200	28,300	18.5	12.5	2,490	1,890	3,020	2,130	62,200	3,170	1.56	6.98
	12.5	149	189.7	64,400	29,300	18.4	12.4	2,580	1,950	3,140	2,210	64,500	3,280	1.56	6.71
	16.0	188	239.2	79,600	36,000	18.2	12.3	3,180	2,400	3,910	2,750	80,500	4,040	1.55	5.33
	19.0	220	280.3	91,600	41,300	18.1	12.1	3,660	2,750	4,540	3,190	93,500	4,640	1.53	4.55
600 x 300	12.0	162	206.5	97,200	33,300	21.7	12.7	3,240	2,220	4,000	2,480	79,800	3,830	1.76	6.17
	12.5	169	214.7	101,000	34,500	21.7	12.7	3,360	2,300	4,150	2,570	82,900	3,970	1.76	5.93
	16.0	213	271.2	125,000	42,500	21.5	12.5	4,160	2,830	5,190	3,200	103,000	4,900	1.75	4.70
	19.0	250	318.3	144,000	48,800	21.3	12.4	4,810	3,250	6,040	3,720	120,000	5,640	1.73	4.00
	22.0	286	364.2	162,000	54,600	21.1	12.2	5,420	3,640	6,850	4,210	136,000	6,340	1.72	3.50

BCR295, UBCR365

BCR295 and UBCR365 “Building Column Specification approved by the Minister of Land, Infrastructure, Transport and Tourism, Japan”

Mechanical properties and chemical composition

Refer to page 7-8. BCR295 and UBCR365 have different mechanical properties and chemical composition.

Tolerances

The tolerances on dimensions are established in accordance with BCR295 and UBCR365.

Characteristics	Tolerances	
Outside dimensions of side	±1.0% and ±3.0mm	
H : Longest side		
B : Shortest side		
Wall thickness(T)	(6mm≦T＜16mm)	-0.3mm,+1.0mm
	(16mm≦T)	-0.3mm,+1.2mm
Unevenness of the flat portions of each side	±0.5% and±3.0mm	
Squareness of sides	90°±1.0°	
External corner radius	2.5T±0.5T	
Straightness	(L＜9m)	1/1500 in total length
	(9m≦L)	1/1250 in total length
Twist	[1.5 x Outside dimension(mm)/1000] x total length (m)	
Length	0, +50mm (Private standard tolerance)	

NOTE

1)Outside dimensions are measured across the flats at positions at least 50mm from the end of the HSS.

Packing

In bare bundle, steel banded or in bulk. Standard lengths are 6, 8 and 12 meter.

Marking

Each of the square and rectangular hollow sections shall be marked with the following information.
a)Manufacturer's Name b)Product's Name c)Standard d)Size e)Length f)Manufacturing Year and Month g)Manufacturing Mill h)Heat No. i)Country of Origin

Inspection and Testing

BCR295 and UBCR365 are subject to tensile testing in accordance with JIS Z 2241.
The general matters of inspection shall be in accordance with JIS G 0404.

If you need additional requirements, please consult us.

Available of size range

Dimensions (mm-size)

Size(mm)		Wall thickness(mm)							
SQUARE	RECTANGULAR	6.0	8.0	9.0	12.0	14.0	16.0	19.0	22.0
150 x 150		●		●	●				
	175 x 125	●		●	●				
	200 x 100	●		●	●				
175 x 175		●		●	●				
	200 x 150	●		●	●				
	250 x 100	●		●	●				
200 x 200		●	●	●	●				
	250 x 150	●	●	●	●				
250 x 250		●	●	●	●	●	●		
	300 x 200	●	●	●	●	●	●		
	350 x 150	●	●	●	●				
300 x 300		●	●	●	●	●	●	●	
	400 x 200	●	●	●	●				
350 x 350				●	●	●	●	●	●
400 x 400				●	●	●	●	●	●
450 x 450				●	●	●	●	●	●
	600 x 300				●	●	●	●	
500 x 500				●	●	●	●	●	●
550 x 550							●	●	●

● BCR295 Available

If you require other sizes, please consult us.

BCR295, UBCR365

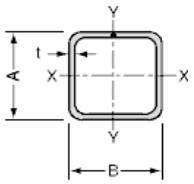
Section properties Square : 150 mm x 150 mm to 550 mm x 550 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
150 x 150	6.0	26.2	33.32	1,130	1,130	5.82	5.82	150	150	178	178	1,840	229	0.574	38.2
	9.0	37.7	47.98	1,540	1,540	5.66	5.66	205	205	248	248	2,610	316	0.561	26.6
	12.0	48.1	61.30	1,850	1,850	5.50	5.50	247	247	307	307	3,260	386	0.548	20.8
175 x 175	6.0	30.9	39.32	1,840	1,840	6.84	6.84	210	210	246	246	2,970	320	0.674	32.4
	9.0	44.7	56.98	2,550	2,550	6.68	6.68	291	291	348	348	4,250	446	0.661	22.4
	12.0	57.5	73.30	3,120	3,120	6.52	6.52	356	356	437	437	5,380	552	0.648	17.4
200 x 200	6.0	35.6	45.32	2,800	2,800	7.86	7.86	280	280	327	327	4,480	425	0.774	28.1
	8.0	46.5	59.24	3,570	3,570	7.76	7.76	357	357	421	421	5,820	544	0.766	21.5
	9.0	51.8	65.98	3,920	3,920	7.71	7.71	392	392	465	465	6,450	599	0.761	19.3
	12.0	67.0	85.30	4,860	4,860	7.55	7.55	486	486	588	588	8,240	749	0.748	14.9
250 x 250	6.0	45.0	57.32	5,620	5,620	9.90	9.90	450	450	521	521	8,870	681	0.974	22.2
	8.0	59.1	75.24	7,230	7,230	9.80	9.80	578	578	676	676	11,600	878	0.966	16.9
	9.0	65.9	83.98	7,980	7,980	9.75	9.75	639	639	750	750	12,900	972	0.961	15.2
	12.0	85.8	109.3	10,100	10,100	9.59	9.59	805	805	959	959	16,700	1,230	0.948	11.7
	14.0	98.5	125.4	11,300	11,300	9.49	9.49	903	903	1,090	1,090	19,000	1,390	0.940	10.2
	16.0	111	141.0	12,400	12,400	9.38	9.38	992	992	1,210	1,210	21,200	1,530	0.931	9.04
300 x 300	6.0	54.4	69.32	9,890	9,890	11.9	11.9	660	660	760	760	15,500	996	1.17	18.4
	8.0	71.6	91.24	12,800	12,800	11.8	11.8	853	853	991	991	20,300	1,290	1.17	14.0
	9.0	80.1	102.0	14,200	14,200	11.8	11.8	946	946	1,100	1,100	22,700	1,430	1.16	12.5
	12.0	105	133.3	18,100	18,100	11.6	11.6	1,200	1,200	1,420	1,420	29,400	1,830	1.15	9.56
	14.0	120	153.4	20,400	20,400	11.5	11.5	1,360	1,360	1,620	1,620	33,700	2,080	1.14	8.30
	16.0	136	173.0	22,600	22,600	11.4	11.4	1,510	1,510	1,810	1,810	37,800	2,310	1.13	7.36
	19.0	158	201.2	25,500	25,500	11.3	11.3	1,700	1,700	2,070	2,070	43,600	2,630	1.12	6.33
350 x 350	9.0	94.2	120.0	23,000	23,000	13.8	13.8	1,310	1,310	1,520	1,520	36,400	1,990	1.36	10.6
	12.0	124	157.3	29,400	29,400	13.7	13.7	1,680	1,680	1,970	1,970	47,500	2,560	1.35	8.10
	14.0	142	181.4	33,400	33,400	13.6	13.6	1,910	1,910	2,260	2,260	54,500	2,910	1.34	7.02
	16.0	161	205.0	37,200	37,200	13.5	13.5	2,130	2,130	2,530	2,530	61,400	3,250	1.33	6.21
	19.0	188	239.2	42,400	42,400	13.3	13.3	2,420	2,420	2,910	2,910	71,100	3,720	1.32	5.33
	22.0	214	272.0	47,100	47,100	13.2	13.2	2,690	2,690	3,270	3,270	80,300	4,150	1.31	4.68
400 x 400	9.0	108	138.0	34,800	34,800	15.9	15.9	1,740	1,740	2,010	2,010	54,700	2,630	1.56	9.23
	12.0	142	181.3	44,800	44,800	15.7	15.7	2,240	2,240	2,610	2,610	71,600	3,400	1.55	7.03
	14.0	164	209.4	51,100	51,100	15.6	15.6	2,560	2,560	3,000	3,000	82,500	3,890	1.54	6.08
	16.0	186	237.0	57,100	57,100	15.5	15.5	2,850	2,850	3,370	3,370	93,000	4,350	1.53	5.38
	19.0	218	277.2	65,400	65,400	15.4	15.4	3,270	3,270	3,900	3,900	108,000	5,000	1.52	4.60
	22.0	248	316.0	73,000	73,000	15.2	15.2	3,650	3,650	4,390	4,390	123,000	5,610	1.51	4.03
450 x 450	9.0	122	156.0	50,100	50,100	17.9	17.9	2,230	2,230	2,560	2,560	78,400	3,360	1.76	8.17
	12.0	161	205.3	64,800	64,800	17.8	17.8	2,880	2,880	3,340	3,340	103,000	4,360	1.75	6.21
	14.0	186	237.4	74,100	74,100	17.7	17.7	3,290	3,290	3,840	3,840	119,000	5,000	1.74	5.37
	16.0	211	269.0	82,900	82,900	17.6	17.6	3,690	3,690	4,330	4,330	134,000	5,610	1.73	4.74
	19.0	247	315.2	95,500	95,500	17.4	17.4	4,240	4,240	5,020	5,020	156,000	6,480	1.72	4.04
	22.0	283	360.0	107,000	107,000	17.2	17.2	4,760	4,760	5,680	5,680	178,000	7,290	1.71	3.54
500 x 500	9.0	137	174.0	69,300	69,300	20.0	20.0	2,770	2,770	3,190	3,190	108,000	4,190	1.96	7.32
	12.0	180	229.3	90,000	90,000	19.8	19.8	3,600	3,600	4,160	4,160	142,000	5,450	1.95	5.56
	14.0	208	265.4	103,000	103,000	19.7	19.7	4,120	4,120	4,790	4,790	164,000	6,250	1.94	4.80
	16.0	236	301.0	116,000	116,000	19.6	19.6	4,630	4,630	5,410	5,410	186,000	7,030	1.93	4.23
	19.0	277	353.2	134,000	134,000	19.4	19.4	5,340	5,340	6,290	6,290	217,000	8,140	1.92	3.61
	22.0	317	404.0	150,000	150,000	19.3	19.3	6,010	6,010	7,130	7,130	247,000	9,190	1.91	3.15
550 x 550	12.0	199	253.3	121,000	121,000	21.9	21.9	4,400	4,400	5,080	5,080	190,000	6,650	2.15	5.03
	14.0	230	293.4	139,000	139,000	21.7	21.7	5,050	5,050	5,850	5,850	220,000	7,640	2.14	4.34
	16.0	261	333.0	156,000	156,000	21.6	21.6	5,670	5,670	6,610	6,610	249,000	8,600	2.13	3.83
	19.0	307	391.2	181,000	181,000	21.5	21.5	6,570	6,570	7,700	7,700	291,000	9,990	2.12	3.26
	22.0	352	448.0	204,000	204,000	21.3	21.3	7,420	7,420	8,750	8,750	333,000	11,300	2.11	2.84

NOTE

The calculation of section properties are based on the following corner geometry, as standard.

Thickness(T)	Inside corner profile	Outside corner profile
nominal	1.5T	2.5T

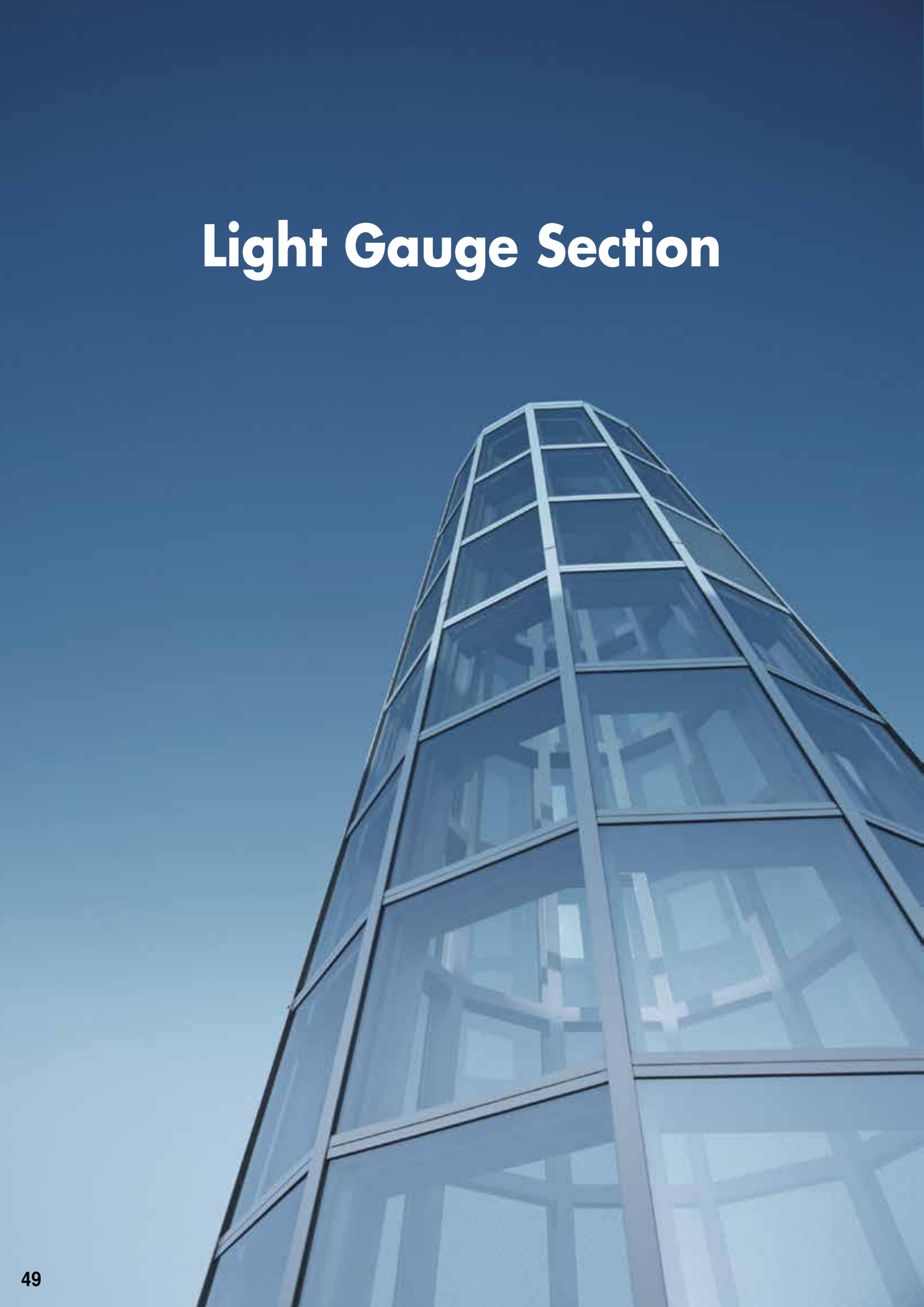


Section properties Rectangular : 175 mm x 125 mm to 600 mm x 300 mm

Dimensions		Mass	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
Nominal size	Thickness														
A x B mm	t mm	M kg/m	A cm^2	Ix cm^4	Iy cm^4	ix cm	iy cm	Zx cm^3	Zy cm^3	Zpx cm^3	Zpy cm^3	cm^4	cm^3	m^2/m	m
175 x 125	6.0	26.2	33.32	1,410	841	6.51	5.02	161	135	196	156	1,730	222	0.574	38.2
	9.0	37.7	47.98	1,930	1,140	6.34	4.88	220	183	274	217	2,450	305	0.561	26.6
	12.0	48.1	61.30	2,320	1,370	6.15	4.73	265	219	339	268	3,050	371	0.548	20.8
200 x 100	6.0	26.2	33.32	1,670	569	7.08	4.13	167	114	210	130	1,420	200	0.574	38.2
	9.0	37.7	47.98	2,280	764	6.89	3.99	228	153	293	180	1,990	272	0.561	26.6
	12.0	48.1	61.30	2,740	908	6.68	3.85	274	182	363	222	2,450	327	0.548	20.8
200 x 150	6.0	30.9	39.32	2,240	1,440	7.54	6.05	224	192	268	221	2,840	312	0.674	32.4
	9.0	44.7	56.98	3,100	1,990	7.37	5.90	310	265	379	312	4,050	435	0.661	22.4
	12.0	57.5	73.30	3,800	2,430	7.20	5.75	380	323	476	390	5,130	538	0.648	17.4
250 x 100	6.0	30.9	39.32	2,940	702	8.65	4.22	236	140	301	158	1,910	253	0.674	32.4
	9.0	44.7	56.98	4,060	951	8.44	4.09	325	190	425	221	2,680	346	0.661	22.4
	12.0	57.5	73.30	4,960	1,140	8.23	3.95	397	228	531	275	3,320	421	0.648	17.4
250 x 150	6.0	35.6	45.32	3,840	1,750	9.20	6.22	307	233	374	264	3,900	395	0.774	28.1
	8.0	46.5	59.24	4,890	2,220	9.08	6.12	391	296	482	340	5,050	504	0.766	21.5
	9.0	51.8	65.98	5,370	2,430	9.02	6.07	430	324	533	375	5,600	554	0.761	19.3
	12.0	67.0	85.30	6,660	3,000	8.84	5.93	533	400	674	473	7,110	690	0.748	14.9
300 x 200	6.0	45.0	57.32	7,300	3,930	11.3	8.28	487	393	583	443	8,140	651	0.974	22.2
	8.0	59.1	75.24	9,390	5,040	11.2	8.19	626	504	757	574	10,600	838	0.966	16.9
	9.0	65.9	83.98	10,400	5,560	11.1	8.14	692	556	840	637	11,800	927	0.961	15.2
	12.0	85.8	109.3	13,100	6,980	10.9	7.99	872	698	1,070	814	15,200	1,170	0.948	11.7
	14.0	98.5	125.4	14,700	7,820	10.8	7.90	979	782	1,220	922	17,300	1,320	0.940	10.2
	16.0	111	141.0	16,100	8,570	10.7	7.80	1,080	857	1,350	1,020	19,300	1,450	0.931	9.04
350 x 150	6.0	45.0	57.32	8,810	2,370	12.4	6.43	504	316	631	350	6,140	561	0.974	22.2
	8.0	59.1	75.24	11,300	3,030	12.3	6.34	647	404	818	453	7,970	719	0.966	16.9
	9.0	65.9	83.98	12,500	3,330	12.2	6.30	714	444	908	502	8,840	793	0.961	15.2
	12.0	85.8	109.3	15,700	4,140	12.0	6.16	899	552	1,160	638	11,300	995	0.948	11.7
400 x 200	6.0	54.4	69.32	14,700	5,060	14.5	8.54	733	506	900	559	12,100	877	1.17	18.4
	8.0	71.6	91.24	19,000	6,520	14.4	8.45	949	652	1,170	728	15,800	1,130	1.17	14.0
	9.0	80.1	102.0	21,000	7,200	14.4	8.40	1,050	720	1,310	809	17,600	1,260	1.16	12.5
	12.0	105	133.3	26,800	9,110	14.2	8.27	1,340	911	1,680	1,040	22,700	1,600	1.15	9.56
600 x 300	12.0	161	205.3	96,100	33,000	21.6	12.7	3,200	2,200	3,960	2,460	80,100	3,820	1.75	6.21
	14.0	186	237.4	110,000	37,600	21.5	12.6	3,660	2,510	4,550	2,820	92,200	4,370	1.74	5.37
	16.0	211	269.0	123,000	42,000	21.4	12.5	4,100	2,800	5,120	3,170	104,000	4,890	1.73	4.74
	19.0	247	315.2	142,000	48,100	21.2	12.4	4,720	3,210	5,940	3,670	121,000	5,630	1.72	4.04

Application

Light Gauge Section



Light Gauge Section

LGS

JIS Standard (JIS G 3350)

Tolerances

Characteristics		Tolerance
Height(H)	150mm or under	±1.5mm
	over 150 up to 300mm, incl.	±2.0mm
	over 300mm	±3.0mm
Side (A)		±1.5mm
Lip (C)		±2.0mm
Squareness		±1.5°
Length		+40 0mm
Straightness		0.2% or less of the whole lenght
Plate thickness of flat part (t)	1.6mm	±0.22mm
	2.3mm	±0.25mm
	3.2mm	±0.30mm
	4.0mm, 4.5mm	±0.45mm
	6.0mm	±0.60mm

Chemical Composition

Symbol	(%) max		
	C	P	S
SSC400	0.25	0.050	0.050

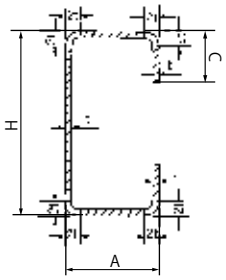
Mechanical Properties

Symbol	Yield point (N/mm^2)	Tensile strength (N/mm^2)	Elongation		
			Thickness (mm)	Test piece	%
SSC400	245 min.	400~540	5 or less	No.5	21 min.
			over 5	No.1A	17 min.

NOTE

1) The plate flat parts refer to the shaded portions of the illustration.
2) The bend refers to a large bend in the length direction of flat part.
3) The measuring position of section size and squareness shall be an arbitrary position except both ends of the Light gauge section.

If you require other standards and requirements, please consult us.

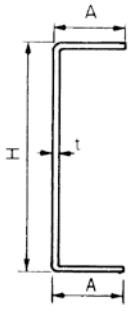


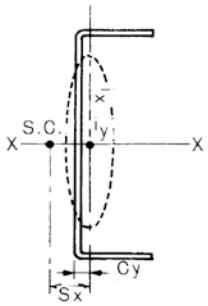
Section Properties Lip channel section

Dimensions (mm-size)

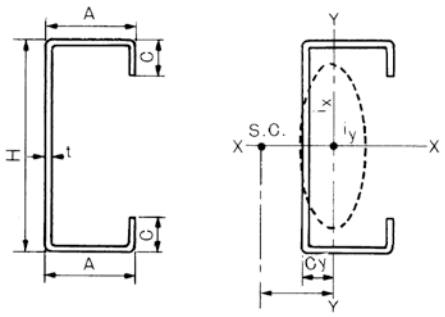
Dimensions		Mass	Area	Center of gravity		Moment of inertia		Radius of gyration		Elastic section modulus		Shear center	
H x A	t			Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
mm	mm	kg /m	cm^2	cm	cm	cm^4	cm^4	cm	cm	cm^3	cm^3	cm	cm
100 x 50	3.2	4.76	6.063	0	1.40	93.6	14.9	3.93	1.57	18.7	4.15	3.1	0
	2.3	3.47	4.426	0	1.36	69.9	11.1	3.97	1.58	14.0	3.04	3.1	0
100 x 40	3.2	4.26	5.423	0	1.03	78.6	7.99	3.81	1.21	15.7	2.69	2.2	0
	2.3	3.11	3.966	0	0.99	58.9	5.96	3.85	1.23	11.8	1.98	2.2	0
80 x 40	2.3	2.75	3.506	0	1.11	34.9	5.56	3.16	1.26	8.73	1.92	2.4	0
60 x 30	2.3	2.03	2.586	0	0.86	14.2	2.27	2.34	0.94	4.72	1.06	1.8	0
	1.6	1.44	1.836	0	0.82	10.3	1.64	2.37	0.95	3.45	0.75	1.8	0
40 x 40	3.2	2.75	3.503	0	1.51	9.21	5.72	1.62	1.28	4.60	2.30	3.0	0
40 x 20	2.3	1.31	1.666	0	0.61	3.86	0.63	1.52	0.61	1.93	0.45	1.2	0
	1.6	0.939	1.196	0	0.57	2.90	0.46	1.56	0.62	1.45	0.32	1.2	0

If you require other sizes , please consult us.





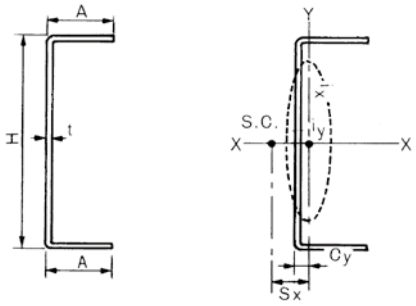
Light Gauge Section



Section Properties Lip channel section — Dimensions (mm-size)

Dimensions		Mass	Area	Center of gravity		Moment of inertia		Radius of gyration		Elastic section modulus		Shear center	
H x A x C	t			Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
mm	mm	kg /m	cm^2	cm	cm	cm^4	cm^4	cm	cm	cm^3	cm^3	cm	cm
250 x 75 x 25	4.5	14.9	18.92	0	2.07	1,690	129	9.44	2.62	135	23.8	5.1	0
	4.0	13.3	16.95	0	2.07	1,520	118	9.48	2.64	122	21.8	5.2	0
250 x 75 x 20	4.5	14.5	18.47	0	1.95	1,640	117	9.42	2.52	131	21.0	4.9	0
	4.0	13.0	16.55	0	1.95	1,480	107	9.46	2.54	118	19.3	4.8	0
200 x 75 x 25	4.5	13.1	16.67	0	2.32	990	121	7.71	2.69	99.0	23.3	5.6	0
	4.0	11.7	14.95	0	2.32	895	110	7.74	2.72	89.5	21.3	5.7	0
	3.2	9.52	12.13	0	2.33	736	92.3	7.79	2.76	73.6	17.8	5.7	0
200 x 75 x 20	4.5	12.7	16.22	0	2.19	963	109	7.71	2.60	96.3	20.6	5.3	0
	4.0	11.4	14.55	0	2.19	871	100	7.74	2.62	87.1	18.9	5.3	0
	3.2	9.27	11.81	0	2.19	716	84.1	7.79	2.67	71.6	15.8	5.4	0
175 x 50 x 20	3.2	7.38	9.407	0	1.43	406	29.7	6.57	1.78	46.4	8.31	3.6	0
	2.3	5.41	6.897	0	1.43	3.4	23.0	6.64	1.82	34.7	6.43	3.6	0
150 x 75 x 25	4.5	11.3	14.42	0	2.65	501	109	5.90	2.75	66.9	22.5	6.3	0
	4.0	10.2	12.95	0	2.65	455	99.8	5.93	2.78	60.6	20.6	6.3	0
	3.2	8.27	10.53	0	2.66	375	83.6	5.97	2.82	50.0	17.3	6.4	0
150 x 75 x 20	4.5	11.0	13.97	0	2.50	489	99.2	5.92	2.66	65.2	19.8	6.0	0
	4.0	9.85	12.55	0	2.51	444	90.9	5.95	2.69	59.2	18.2	6.0	0
	3.2	8.01	10.21	0	2.51	366	76.4	5.99	2.74	48.9	15.3	6.1	0
	2.3	5.87	7.472	0	2.52	273	57.9	6.04	2.78	36.4	11.6	6.1	0
150 x 65 x 20	4.5	10.3	13.07	0	2.10	441	69.2	5.81	2.30	58.8	15.7	5.1	0
	4.0	9.22	11.75	0	2.11	401	63.7	5.84	2.33	53.5	14.5	5.1	0
	3.2	7.51	9.567	0	2.11	332	53.8	5.89	2.37	44.3	12.2	5.1	0
	2.3	5.50	7.012	0	2.12	248	41.1	5.94	2.42	33.0	9.37	5.2	0
150 x 50 x 20	4.5	9.20	11.72	0	1.54	368	35.7	5.60	1.75	49.0	10.5	3.7	0
	4.0	8.28	10.55	0	1.54	337	33.1	5.65	1.77	44.9	9.57	3.8	0
	3.2	6.76	8.607	0	1.54	280	28.3	5.71	1.81	37.4	8.19	3.8	0
	2.3	4.96	6.322	0	1.55	210	21.9	5.77	1.86	28.0	6.33	3.8	0
125 x 50 x 20	4.5	8.32	10.59	0	1.68	238	33.5	4.74	1.78	38.0	10.0	4.0	0
	4.0	7.50	9.548	0	1.68	217	31.1	4.77	1.81	34.7	9.38	4.0	0
	3.2	6.13	7.807	0	1.68	181	26.6	4.82	1.85	29.0	8.02	4.0	0
	2.3	4.51	5.747	0	1.69	137	20.6	4.88	1.89	21.99	6.22	4.1	0
120 x 60 x 25	3.2	6.76	8.607	0	2.26	191	45.2	4.71	2.29	31.8	12.1	5.4	0
	2.3	4.96	6.322	0	2.27	143	34.5	4.76	2.34	23.9	9.23	5.5	0
120 x 60 x 20	4.5	8.85	11.27	0	2.11	245	52.2	4.67	2.15	40.9	13.4	4.9	0
	4.0	7.97	10.15	0	2.12	224	48.2	4.69	2.18	37.3	12.4	4.9	0
	3.2	6.51	8.287	0	2.12	186	40.9	4.7	2.22	31.0	10.5	4.9	0
	2.3	4.78	6.092	0	2.13	140	31.3	4.79	2.27	23.3	8.10	5.1	0
100 x 50 x 20	3.2	5.50	7.007	0	1.86	107	24.5	3.90	1.87	21.3	7.81	4.4	0
	2.3	4.06	5.172	0	1.86	80.7	19.0	3.95	1.92	16.1	6.06	4.4	0
	1.6	2.88	3.672	0	1.87	58.4	14.0	3.99	1.95	11.7	4.47	4.5	0
75 x 45 x 15	2.3	3.25	4.137	0	1.72	37.1	11.8	3.00	1.69	9.90	4.24	4.0	0
	1.6	2.32	2.952	0	1.72	27.1	8.71	3.03	1.72	7.24	3.13	4.1	0
60 x 30 x 10	2.3	2.25	2.872	0	1.06	15.6	3.32	2.33	1.07	5.20	1.71	2.5	0
	1.6	1.63	2.072	0	1.06	11.6	2.56	2.37	1.11	3.88	1.32	2.5	0

If you require other sizes, please consult us.



Section Properties Light channel section — Dimensions (mm-size)

Dimensions		Mass	Area	Center of gravity		Moment of inertia		Radius of gyration		Elastic section modulus		Shear center	
H x A	t			Cx	Cy	Ix	Iy	ix	iy	Zx	Zy	Sx	Sy
mm	mm	kg /m	cm^2	cm	cm	cm^4	cm^4	cm	cm	cm^3	cm^3	cm	cm
450 x 75	6.0	27.3	34.82	0	1.19	8,400	122	15.5	1.87	374	19.4	2.7	0
	4.5	20.7	26.33	0	1.13	6,430	94.3	15.6	1.89	286	14.8	2.7	0
	4.0	18.4	23.47	0	1.11	5,760	84.6	15.7	1.90	256	13.2	2.7	0
450 x 50	6.0	25.0	31.82	0	0.71	6,930	36.9	14.8	1.08	3.8	8.61	1.4	0
	4.5	18.9	24.08	0	0.65	5,320	28.7	14.9	1.09	236	6.59	1.4	0
	4.0	16.9	21.47	0	0.63	4,760	25.8	14.9	1.10	212	5.90	1.4	0
400 x 75	6.0	25.0	31.82	0	1.28	6,230	120	14.0	1.94	312	19.2	2.9	0
	4.5	18.9	24.08	0	1.21	4,780	92.2	14.1	1.96	239	14.7	2.9	0
	4.0	16.9	21.47	0	1.19	4,280	82.8	14.1	1.96	214	13.1	2.9	0
400 x 50	6.0	22.6	28.82	0	0.75	5,070	36.3	13.3	1.12	253	8.54	1.5	0
	4.5	17.1	21.83	0	0.69	3,900	28.2	13.4	1.14	195	6.54	1.5	0
	4.0	15.3	19.47	0	0.67	3,490	25.4	13.4	1.14	175	5.86	1.5	0
350 x 75	6.0	22.6	28.82	0	1.38	4,450	116	12.4	2.01	254	19.0	3.2	0
	4.5	17.1	21.83	0	1.32	3,420	89.8	12.5	2.03	196	14.5	3.2	0
	4.0	15.3	19.47	0	1.29	3,070	80.6	12.5	2.03	175	13.0	3.2	0
	3.2	12.3	15.66	0	1.26	2,480	65.5	12.6	2.04	142	10.5	3.2	0
350 x 50	6.0	20.3	25.82	0	0.81	3,570	35.3	11.8	1.17	204	8.44	1.6	0
	4.5	15.4	19.58	0	0.75	2,750	27.5	11.9	1.19	157	6.48	1.6	0
	4.0	13.7	17.47	0	0.73	2,470	24.8	11.9	1.19	141	5.81	1.6	0
	3.2	11.0	14.06	0	0.69	2,000	20.3	11.9	1.20	115	4.71	1.7	0
300 x 75	6.0	20.3	25.82	0	1.511	3,040	112	10.8	2.08	202	18.7	3.5	0
	4.5	15.4	19.58	0	1.44	2,340	86.7	10.9	2.10	156	14.3	3.5	0
	4.0	13.7	17.47	0	1.42	2,100	77.9	11.0	2.11	140	12.8	3.5	0
	3.2	11.0	14.06	0	1.38	1,700	63.3	11.0	2.12	114	10.4	3.5	0
300 x 50	6.0	17.9	22.82	0	0.87	2,390	34.5	10.2	1.23	159	8.36	1.8	0
	4.5	13.6	17.33	0	0.82	1,850	26.8	10.3	1.24	123	6.41	1.8	0
	4.0	12.1	15.47	0	0.80	1,660	24.1	10.4	1.25	111	5.74	1.8	0
	3.2	9.78	12.46	0	0.766	1,350	19.8	10.4	1.26	90.0	4.66	1.8	0
250 x 75	6.0	17.9	22.82	0	1.66	1,940	107	9.23	2.17	155	18.4	3.7	0
	4.5	13.6	17.33	0	1.60	1,500	82.9	9.31	2.19	120	14.0	3.8	0
	4.0	12.1	15.47	0	1.58	1,350	74.5	99.34	2.19	108	12.6	3.8	0
250 x 50	6.0	15.6	19.82	0	0.97	1,500	33.1	8.69	1.29	120	8.20	2.0	0
	4.5	11.8	15.08	0	0.91	1,160	25.9	8.78	1.31	93.0	6.31	2.0	0
	4.0	10.6	13.47	0	0.88	1,050	23.3	8.81	1.32	83.7	5.66	2.0	0
200 x 75	6.0	15.6	19.82	0	1.87	1,130	101	7.56	2.25	113	17.9	4.1	0
	4.5	11.8	15.08	0	1.80	881	78.0	7.64	2.27	88.1	13.7	4.2	0
	4.0	10.6	13.47	0	1.78	792	70.1	7.67	2.28	79.2	12.3	4.2	0
	3.2	8.53	10.86	0	1.75	645	57.0	7.71	2.29	664.5	99.92	4.2	0
200 x 50	6.0	13.2	16.82	0	1.09	852	31.4	7.12	1.37	85.2	8.03	2.2	0
	4.5	10.1	12.83	0	1.03	666	24.6	7.20	1.38	66.6	6.19	2.2	0
	4.0	9.00	11.47	0	1.00	600	22.2	7.23	1.39	60.0	5.55	2.2	0
	3.2	7.27	9.263	0	0.97	490	18.2	7.28	1.40	49.0	4.51	2.3	0
150 x 75	6.0	13.2	16.82	0	2.15	573	91.9	5.84	2.34	76.4	17.2	4.6	0
	4.5	10.1	12.83	0	2.08	448	71.4	5.91	2.36	59.8	13.2	4.6	0
	4.0	9.00	11.47	0	2.06	404	64.2	5.93	2.36	53.9	11.8	4.6	0
	3.2	7.27	9.263	0	2.02	330	52.3	5.97	2.38	44.0	9.55	4.7	0
150 x 50	6.0	10.8	13.82	0	1.25	417	29.2	5.50	1.45	55.6	7.77	2.6	0
	4.5	8.31	10.58	0	1.20	329	22.8	5.58	1.47	43.9	5.99	2.6	0
	4.0	7.44	9.474	0	1.17	297	20.6	5.60	1.47	39.6	5.38	2.6	0
	3.2	6.02	7.663	0	1.14	244	16.9	5.64	1.48	32.5	4.37	2.6	0
	2.3	4.38	5.576	0	1.10	181	12.5	5.69	1.50	24.1	3.20	2.6	0
120 x 40	3.2	4.76	6.063	0	0.94	122	8.43	4.48	1.18	20.3	2.75	2.1	0
	2.3	3.47	4.426	0	0.90	90.8	6.28	4.53	1.19	15.1	2.02	2.11	0

If you require other sizes, please consult us.

Primer painted
Pre-Galvanized

Primer painted

Primer painted industry preferred finish products are coated with our exclusive waterborne primer paint systems.
Target of average coating thickness is 15micro,has rust simple prevention, but no warranted.

Hollow structural section

Correspond Specifications			
Color		Red,Gray	
Reference standard		ASTM A500	Grade B,Grade C
		EN 10219	S275J0H S355J0H S355J2H
		AS 1163	C350,C350L0 C450,C450L0
		JIS G 3466	STKR400 STKR490
		Approved by MLIT of Japan	BCR 295
Dimension (mm)	Square	1.6 x 50 x 50 ~ 6.0 x 175 x 175	
	Rectangular	1.6 x 50 x 30 ~ 6.0 x 200 x 150	
Length		5.5m~12m	

Light gauge section

Specifications			
Color		Red,Gray	
Reference standard		JIS G 3350	SSC400
Dimension (mm)	Ligth Gauge Channel Section	100 x 50 ,100 x 40, 80 x 40 60 x 30, 40 x 40, 40 x 20	
	Lip Channel Section	150x 50 x 20 125x 50 x 20 75 x 45 x 15 30 x 30 x 10	
Length		5.5m~12m	

Pre-Galvanized

HSS and LGS produced by pre-galvanized steel sheet has highly corrosion-resistant.
Not only rust resistant on flat surfaces but also highly rust resistant on cut-end surfaces.
In addition,extremely high alkaline resistance strongly resistant to rust at bends and in cylindrically-drawn sections fine finishes with fewer scratches after fabrication.

Hollow structural section

Correspond Specifications			
Pre-Galvanized[1)]		Zinc 120kg/m^2 Zinc 275kg/m^2	
Reference standard		ASTM A500	Grade B,Grade C
		JIS G 3466	STKR400,STKR490
Dimension (mm)	Square	50 x 50 x 1.6 ~ 50 x 50 x 3.2 60 x 60 x 1.6 ~ 60 x 60 x 3.2 75 x 75 x 2.3 ~ 75 x 75 x 4.5 100 x 100 x 2.3 ~ 100 x 100 x 9.0 125 x 125 x 3.2 ~ 125 x 125 x 6.0	
	Rectangular	60 x 30 x 1.6 ~ 60 x 30 x 3.2 75 x 45 x 1.6 ~ 75 x 45 x 3.2 100 x 50 x 2.3 ~ 100 x 50 x 4.5 125 x 75 x 2.3 ~ 125 x 75 x 9.0 150 x 100 x 3.2 ~ 150 x 100 x 6.0	
Length		5.5m~12m	

Light gauge section

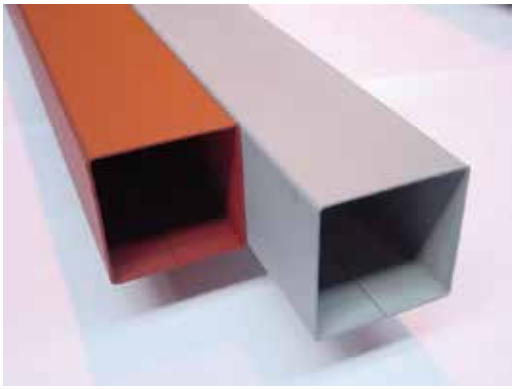
Specifications			
Pre-Galvanized[1)]		Zinc 120kg/m^2 Zinc 275kg/m^2	
Reference standard		JIS G 3350	SSC400
Dimension (mm) HxAxC	Ligth Gauge Channel Section	100 x 50 ,100 x 40, 80 x 40 60 x 30, 40 x 40, 40 x 20	
	Lip Channel Section	150 x 50 x 20 125 x 50 x 20 75 x 45 x 15 30 x 30 x 10	
Length		5.5m~12m	

NOTE
1)total mass on both surface.

If you need additional requirements, please consult us.

Application

Primer painted



Pre-Galvanized

- Wall rails of plants and warehouses
  (in the areas of salt damage)
- Purlins and floor joists of long life house etc.

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