

AS/NZS 1163 Cold Formed Welded Square Tubes

Nominal dimensions and sectional properties of square hollow sections

SQUARE HOLLOW SECTIONS														
Size (bxb)		Wall Thickness (t)		Mass per unit length		Pieces/bdls	Size (bxb)		Wall Thickness (t)		Mass per unit length		Pieces/bdls	
in	mm	in	mm	kg/m	lb/ft		in	mm	in	mm	kg/m	lb/ft		
1 3/5 x 1 3/5	40 x 40	0.063	1.60	1.88	1.263	81	3 1/2 x 3 1/2	89 x 89	0.197	5.00	12.50	8.401	16	
		0.079	2.00	2.31	1.552	81			0.236	6.00	14.60	9.812	16	
		0.098	2.50	2.82	1.895	64	4 x 4	100 x 100	0.118	3.00	8.96	6.022	20	
		0.157	4.00	4.09	2.749	49			0.157	4.00	11.60	7.796	20	
2 x 2	50 x 50	0.063	1.60	2.38	1.599	64	4 x 4	100 x 100	0.197	5.00	14.20	9.543	16	
		0.079	2.00	2.93	1.969	49			0.236	6.00	16.70	11.223	12	
		0.098	2.50	3.60	2.419	49			0.354	9.00	23.50	15.793	9	
		0.118	3.00	4.25	2.856	49	5 x 5	125 x 125	0.157	4.00	14.80	9.946	16	
		0.157	4.00	5.35	3.595	36			0.197	5.00	18.20	12.231	12	
2 9/16 x 2 9/16	65 x 65	0.079	2.00	3.88	2.608	49	5 x 5	125 x 125	0.236	6.00	21.40	14.382	12	
		0.098	2.50	4.78	3.212	36			0.354	9.00	30.60	20.565	9	
		0.118	3.00	5.66	3.804	36	6 x 6	150 x 150	0.197	5.00	22.10	14.852	9	
0.098	2.50	5.56	3.737	36	0.236	6.00			26.20	17.608	9			
0.118	3.00	6.60	4.435	36	0.354	9.00		37.70	25.336	6				
3 x 3	75 x 75	0.138	3.50	7.53	5.060	36		8 x 8	200 x 200	0.197	5.00	29.90	20.094	6
		0.157	4.00	8.49	5.706	25				0.236	6.00	35.60	23.925	4
		0.197	5.00	10.30	6.922	20		0.354	9.00	51.80	34.812	4		
		0.236	6.00	12.00	8.065	20	10 x 10	250 x 250	0.236	6.00	45.00	30.242	4	
		0.138	3.50	9.06	6.089	25			0.354	9.00	65.90	44.288	4	
3 1/2 x 3 1/2	89 x 89	0.138	3.50	9.06	6.089	25	10 x 10	250 x 250	0.354	9.00	65.90	44.288	4	

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TOLERANCES ON SHAPE AND MASS:

Characteristic	Circular hollow sections	Square and Rectangular hollow sections
External dimensions (do, d & b)	± 1%, with a minimum of ±0.5 mm and a maximum of ± 10 mm	± 1%, with a minimum of ±0.5 mm
Thickness(t)	± 10%	± 10%
Out of roundness(o)	± 2% for hollow sections having a diameter to thickness ratio not exceeding 100	---
Concavity/Convexity	---	Max. 0.8% or 0.5mm, Whichever is greater
Squareness of sides	---	90° ± 1°
External corner profile	---	Perimeter (mm) Equivalent to 50X50 or less : 1.5t to 3.0t Equivalent to greater than 50X50 : 1.8t to 3.0t
Twist	---	2.0+ 0.5 mm/m length
Straightness	0.20% of total length	0.15% of total length
Mass per unit length	Not less than 0.96 times the specified mass on individual Length	
Length	-0/+20mm	

CHEMICAL COMPOSITION:

Grade	Chemical composition % max.												
	C	Si	Mn	P	S	Cr	Mo	Al	Ni	Cu	Ti	Micro-alloying elements	Ce
C250/ C250LO	0.12	0.05	0.50	0.03	0.03	0.15	0.10	0.10	0.25	0.25	0.04	0.03(Note-1)	0.25

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CHEMICAL COMPOSITION :

Grade	Chemical composition % max.												
	C	Si	Mn	P	S	Cr	Mo	Al	Ni	Cu	Ti	Micro-alloying elements	Ce
C350/ C350LO	0.20	0.25	1.60	0.03	0.03	0.30	0.10	0.10	0.25	0.25	0.04	0.15(Note-2)	0.43
C450/ C450LO	0.20	0.25	1.70	0.03	0.03	0.50	0.35	0.10	0.25	0.25	0.04	0.15(Note-2)	0.43
Note- 1) Nb-0.010 Max						Note-2) V-0.10 Max							
Carbon Equivalent : Carbon equivalent shall be calculated from the following formula. $CEV = C + (Mn / 6) + (Cr + Mo + V) / 5 + (Ni + Cu) / 15$													

MECHANICAL PROPERTIES:

Grade	Min. Yield Strength (MPa)	Tensile Strength (MPa)	Minimum Elongation%	Test Temp.	Minimum Impact Energy(J)					
					Size of Test piece					
					10 X 10 mm		10 X 7.5 mm		10 X 5.0 mm	
					Average of 3 tests	Individual Test	Average of 3 tests	Individual Test	Average of 3 tests	Individual Test
C250/C250LO	250	320	18	0°C	27	20	22	16	18	13
C350/C350LO	350	430	16							
C450/C450LO	450	500	14							

Workmanship : Free from overlap, lamination, tool/roll marks, pin holes, open seam & other harmful defect.

Marking : Stenciling as per the standard & customer requirement.

Packing : Box Type