

AS/NZS 1163 ERW Round Steel Pipes

Nominal dimensions and sectional properties of circular hollow sections

Outside Diameter (do)	Wall Thickness (T)		Mass per unit length		Pieces/bdls
	mm	inch	kg/m	lb/ft	
114.3	0.126	3.20	8.77	5.894	19
	0.142	3.60	9.83	6.606	19
	0.177	4.50	12.20	8.199	14
	0.189	4.80	13.00	8.737	14
	0.213	5.40	14.50	9.745	10
	0.236	6.00	16.00	10.753	10
139.7	0.118	3.00	10.10	6.788	14
	0.138	3.50	11.80	7.930	10
	0.197	5.00	16.60	11.156	10
	0.213	5.40	17.90	12.030	10
165.1	0.118	3.00	12.00	8.065	10
	0.138	3.50	13.90	9.341	10
	0.197	5.00	19.70	13.239	10
	0.213	5.40	21.30	14.315	7
168.3	0.189	4.80	19.40	13.038	10
	0.252	6.40	25.60	17.204	7
	0.280	7.10	28.20	18.952	7
219.1	0.189	4.80	25.40	17.070	4
	0.252	6.40	33.60	22.581	4
	0.323	8.20	42.60	28.629	4

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	mm	inch	mm	kg/m	
273.1	0.189	4.80	31.80	21.371	2
	0.252	6.40	42.10	28.293	2
	0.366	9.30	60.50	40.659	2
323.9	0.252	6.40	50.10	33.669	2
	0.374	9.50	73.70	49.530	2
	0.500	12.70	97.50	65.524	2

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

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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
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

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					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
C350/C350LO	350	430	16	0°C	27	20	22	16	18	13
C450/C450LO	450	500	14							

Flattening Test (90°)

: The test piece shall be flattened until the distance between the surfaces is $0.75d_o$ or less.

Workmanship

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

Marking

: Stenciling as per the standard & customer requirement.

Packing

: Hexagonal Type