

Tolerances - AS/NZS 1163:2016

Classification	Specification	Designation of Grade	Mechanical Properties				Chemical Composition %								Impact Properties			
			Tensile Strength		Yield Strength Min.	Elongation Min.		C	Si	Mn	P	S	Mo	Al	CEV	Cu	Test Temperature	Min average absorbed energy for standard test piece
			N/mm ²			CHS	RHS or SHS											
			t < 3mm	3mm ≤ t ≤ 40mm	N/mm ²	%	Max	Max	Max	Max	Max	Max	Max	Max				
Structural Steel Hollow Sections for Australian Standard	AS 1163	C 250	320	250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	-	-	
		C 250 L0	320	250	22	18	0.12	0.05	0.50	0.040	0.030	0.10	0.10	0.25	-	0	27	
		C 350	430	350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	-	-	
		C 350 L0	430	350	20	16	0.20	0.25	1.60	0.040	0.030	0.10	0.10	0.39	-	0	27	
		C 450	500	450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	-	-	
		C 450 L0	500	450	16	14	0.20	0.45	1.60	0.040	0.030	0.35	0.10	0.39	-	0	27	

Characteristic	Type	AS/NZS 1163:2016	
		Cold-formed structural steel hollow sections	
External Dimensions (d_o , d and b)	CHS	±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm	
	SHS & RHS	±1%, with a minimum of ±0.5 mm	
Thickness (t)	CHS	For $d_o \leq 406.4$ mm : ±10% For $d_o > 406.4$ mm : ±10% with maximum of ±2 mm	
	SHS & RHS	±10%	
Out-of-roundness (o)	CHS	±2% for hollow sections having diameter to thickness ratio not exceeding 100, otherwise shall be agreed between APM and the purchaser	
Concavity/ convexity	SHS & RHS	Maximum 0.8% or 0.5 mm, whichever is greater	
Squareness of sides	SHS & RHS	90° ±1°	
External corner profile	SHS & RHS	Perimeter	External corner profile (c_1 , c_2 or r_o)
		mm	mm
		Equivalent to 50 × 50 or less	1.5t to 3.0t
		Equivalent to greater than 50 × 50 or less	1.8t to 3.0t
Twist (v)	SHS & RHS	2 mm + 0.5 mm/m length	
Straightness	CHS	0.20% of total length	
	SHS & RHS	0.15% of total length	
Mass (m) per unit length	CHS SHS & RHS	Not less than 0.96 times the specified mass on individual length	
Tolerances of length (Precision length)	CHS SHS & RHS	Range (mm)	Tolerance
		<6000	+5 mm -0
		≥6000 ≤10000	+15 mm -0
		>10000	+5 mm + 1 mm/m -0