

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls	Size (BXH)		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			
2 1/3 x 1 3/5	60 x 40	0.059	1.50	2.28	1.532	81	3 x 2	75 x 50	0.236	6.00	10.66	7.164	25		
		0.079	2.00	2.96	1.989	64			3 1/7 x 1 3/5	80 x 40	0.059	1.50	2.71	1.821	49
		0.098	2.50	3.71	2.493	64					0.079	2.00	3.56	2.392	49
		0.118	3.00	4.28	2.876	49					0.098	2.50	4.47	3.004	36
		0.157	4.00	5.51	3.703	49					0.118	3.00	5.19	3.488	36
		0.197	5.00	6.85	4.603	49					0.157	4.00	6.71	4.509	25
		0.236	6.00	7.99	5.370	25					0.197	5.00	8.42	5.659	25
2 9/16 x 1 3/8	65 x 35	0.059	1.50	2.28	1.532	81	4 X 2	100 x 50	0.236	6.00	9.87	6.633	20		
		0.079	2.00	2.96	1.989	64			0.059	1.50	3.49	2.345	49		
		0.098	2.50	3.71	2.493	64			0.079	2.00	4.51	3.031	49		
		0.118	3.00	4.28	2.876	49			0.098	2.50	5.63	3.784	36		
		0.157	4.00	5.51	3.703	49			0.118	3.00	6.60	4.435	36		
		0.197	5.00	6.85	4.603	49			0.157	4.00	8.60	5.780	25		
		0.236	6.00	7.99	5.370	25			0.177	4.50	9.90	6.653	20		
3 x 2	75 x 50	0.059	1.50	2.90	1.949	49	4 x 2 1/3	100 x 60	0.197	5.00	10.49	7.050	20		
		0.079	2.00	3.85	2.587	49			0.236	6.00	12.30	8.266	20		
		0.098	2.50	4.80	3.226	36			0.079	2.00	4.83	3.246	49		
		0.118	3.00	5.73	3.851	36			0.118	3.00	7.18	4.825	36		
		0.157	4.00	7.58	5.094	25			0.157	4.00	9.41	6.324	25		
		0.197	5.00	8.60	5.780	25			0.197	5.00	11.60	7.796	20		

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls	Size (BXH)		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			
4 x 2 <sup>1</sup> / <sub>3</sub>	100 x 60	0.236	6.00	13.60	9.140	20			0.177	4.50	13.37	8.985	16		
		0.315	8.00	17.50	11.761	20			0.197	5.00	14.80	9.946	16		
4 <sup>11</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>3</sub>	120 x 60	0.098	2.50	6.80	4.570	30	5 x 3	125 x 75	0.217	5.50	16.68	11.210	16		
		0.118	3.00	8.10	5.444	25			0.236	6.00	17.28	11.613	9		
		0.157	4.00	10.70	7.191	25			0.315	8.00	22.60	15.188	9		
				0.177	4.50	11.99	8.058	20	6 x 3	150 x 75	0.079	2.00	6.99	4.698	25
				0.197	5.00	13.30	8.938	20			0.098	2.50	8.68	5.833	25
				0.236	6.00	15.50	10.417	20			0.118	3.00	10.46	7.030	25
				0.315	8.00	20.10	13.508	16			0.157	4.00	13.85	9.308	20
4 <sup>11</sup> / <sub>16</sub> x 3 <sup>1</sup> / <sub>7</sub>	120 x 80	0.118	3.00	9.03	6.069	20	6 x 3	150 x 75	0.177	4.50	15.44	10.376	16		
		0.157	4.00	12.17	8.179	16			0.197	5.00	17.23	11.579	16		
		0.197	5.00	14.80	9.946	16			0.236	6.00	20.49	13.770	9		
		0.236	6.00	17.28	11.613	12			0.315	8.00	27.19	18.273	9		
				0.315	8.00	22.60	15.188	9	6 <sup>3</sup> / <sub>10</sub> x 3 <sup>1</sup> / <sub>7</sub>	160 x 80	0.118	3.00	11.20	7.527	20
				0.394	10.00	27.40	18.414	9			0.157	4.00	14.40	9.677	16
				0.472	12.00	32.10	21.573	9			0.197	5.00	17.80	11.962	16
5 x 3	125 x 75	0.098	2.50	7.55	5.074	30			0.236	6.00	21.20	14.247	12		
		0.118	3.00	9.03	6.069	24			0.315	8.00	27.60	18.548	9		
				0.157	4.00	12.17	8.179	20	6 x 4	150 x 100	0.118	3.00	11.61	7.802	20
								0.157			4.00	15.10	10.148	16	

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections


Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls	Size (BXH)		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	
6 x 4	150 x 100	0.197	5.00	18.60	12.500	12	10 x 4	250 x 100	0.315	8.00	41.40	27.823	4
		0.236	6.00	22.10	14.852	9			0.394	10.00	51.00	34.274	4
		0.315	8.00	28.90	19.422	9			0.472	12.00	60.20	40.457	2
		0.394	10.00	35.30	23.723	6	10 x 6	250 x 150	0.157	4.00	24.90	16.734	6
		0.472	12.00	41.40	27.823	6			0.197	5.00	30.40	20.430	6
8 x 4	200 x 100	0.157	4.00	18.55	12.466	12	10 x 6	250 x 150	0.236	6.00	36.20	24.328	4
		0.197	5.00	22.60	15.188	9			0.315	8.00	47.70	32.056	4
		0.236	6.00	26.80	18.011	9			0.394	10.00	58.80	39.516	4
		0.315	8.00	35.10	23.589	6	12 x 4	300 x 100	0.472	12.00	69.60	46.774	2
		0.394	10.00	43.10	28.965	6			0.157	4.00	24.90	16.734	4
8 x 6	200 x 150	0.472	12.00	50.80	34.140	4	12 x 4	300 x 100	0.197	5.00	30.40	20.430	4
		0.157	4.00	21.80	14.651	9			0.236	6.00	36.20	24.328	4
		0.197	5.00	26.50	17.809	9			0.315	8.00	47.70	32.056	2
		0.236	6.00	31.50	21.169	6	12 x 6	300 x 150	0.394	10.00	58.80	39.516	2
		0.315	8.00	41.40	27.823	6			0.472	12.00	69.60	46.774	2
10 x 4	250 x 100	0.394	10.00	51.00	34.274	4	12 x 6	300 x 150	0.197	5.00	34.03	22.870	4
		0.472	12.00	60.20	40.457	4			0.236	6.00	40.50	27.218	4
		0.157	4.00	21.80	14.651	4			0.315	8.00	52.80	35.484	2
10 x 4	250 x 100	0.197	5.00	26.50	17.809	4	12 x 6	300 x 150	0.394	10.00	64.80	43.548	2
		0.236	6.00	31.50	21.169	4			0.472	12.00	75.40	50.672	2
		0.315	8.00	41.40	27.823	4							

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

Size (BXH)		Wall Thickness (T)		Mass per unit length		Pieces/bdls	Size (BXH)		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	
12 x 8	300 x 200	0.197	5.00	38.30	25.739	4	12 x 8	300 x 200	0.394	10.00	74.50	50.067	2
		0.236	6.00	45.70	30.712	4			0.472	12.00	88.50	59.476	2
		0.315	8.00	60.30	40.524	2							

## TOLERANCES ON SHAPE AND MASS

Characteristic	Circular hollow sections	Outside flat Dimensions for Square and Rectangular hollow sections	
		OD Flat dimensions in. (mm)	Permissible Variations over and under flat dimensions (a) in. [mm]
External dimensions	 $\pm 0.75\%$ of the specified outside diameter	2½ [65] or under	0.020 [0.5]
		Over 2½ - 3½ [65 - 90]	0.025 [0.6]
		Over 3½ - 5½ [90 - 140]	0.030 [0.8]
		Over 5½ [140]	0.01 times large flat dimension
Thickness(T)	$\pm 10\%$ of the specified wall thickness.		
Squareness of sides( $\emptyset$ )	$90^\circ \pm 2^\circ$		
External corner profile	--	The radius of each outside corner of the section shall not exceed three times the specified wall thickness	
Twist	--	OD Flat dimensions in. (mm)	Max. Permissible Variations in Twist per meter of length in.(mm)
		1½ [40] and under	0.05 [1.3]
		Over 1½ - 2½ [40 - 65]	0.062 [1.6]
		Over 2½ - 4 [65 - 100]	0.075 [1.9]
		Over 4 - 6 [100 - 150]	0.087 [2.2]
		Over 6 - 8 [150 - 200]	0.100 [2.5]
Over 8 [200]	0.112 [2.8]		

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

Straightness	0.20 % of total length [ 10mm x length (in meters) divided by 5 ]
Length	-0 /+20mm
(a) The permissible variations include allowances for convexity and concavity. For rectangular tubing having a ratio of outside large to small flat dimension less than 1.5, and for square tubing, the permissible variations in small flat dimension shall be identical to the permissible variations in large flat dimension. For rectangular tubing having a ratio of outside large to small flat dimension in the range of 1.5 to 3.0 inclusive, the permissible variations in small flat dimension shall be 1.50 times the permissible variations in large flat dimension. For rectangular tubing having a ratio of outside large to small flat dimension greater than 3.0, the permissible variations in large flat dimension. For rectangular tubing having a ratio of outside large to small flat dimension greater than 3.0, the permissible variations in small flat dimension shall be 2.0 times the permissible variations in large flat dimension.	

## CHEMICAL COMPOSITION :

Element	Composition %			
	Grades A & B		Grade C	
	Heat Analysis	Product Analysis	Heat Analysis	Product Analysis
Carbon , max <sup>A</sup>	0.26	0.3	0.23	0.27
Manganese, max <sup>A</sup>	1.35	1.4	1.35	1.4
Phosphorus, max	0.035	0.045	0.035	0.045
Sulfur, max	0.035	0.045	0.035	0.045
Copper, min <sup>B</sup>	0.2	0.18	0.2	0.18

A) For each reduction of 0.01 percentage point below the specified maximum for carbon, an increase of 0.06 percentage point above the specified maximum for manganese is permitted, up to a maximum of 1.50% by heat analysis and 1.60% by product analysis.

B) If copper-containing steel is specified in the purchase order.

# ASTM A500 Cold Formed Welded Rectangular Tubes

Nominal dimensions and sectional properties of rectangular hollow sections

## MECHANICAL PROPERTIES:

Round Structural Tubing			
	Grades A	Grades B	Grades C
Tensile strength, min, psi [MPa]	45 000 [310]	58 000 [400]	62 000 [425]
Yield strength, min, psi [MPa]	33 000 [230]	42 000 [290]	46 000 [315]
Elongation in 2 in. [50 mm] min%	25 <sup>A</sup>	25 <sup>B</sup>	25 <sup>C</sup>
Shaped Structural Tubing			
	Grades A	Grades B	Grades C
Tensile strength , min ,psi [MPa]	45 000 [310]	58 000 [400]	62 000 [425]
Yield strength , min ,psi [MPa]	39 000 [270]	46 000 [315]	50 000 [345]
Elongation in 2 in. [50 mm] min%	25 <sup>A</sup>	23 <sup>B</sup>	21 <sup>C</sup>

A) Applies to specified wall thicknesses (t) equal to or greater than 0.120 in. [3.05mm]. For lighter specified wall thicknesses, the minimum elongation values shall be calculated by the formula: percent elongation in 2 in. [50 mm] = 0.56t + 17.5, rounded to the nearest percent. For A500M use the following formula: 2.2t + 17.5, rounded to the nearest percent.

B) Applies to specified wall thicknesses (t) equal to or greater than 0.180 in. [4.57 mm]. For lighter specified wall thicknesses, the minimum elongation values shall be calculated by the formula: percent elongation in 2 in. [50 mm] = 0.61t + 12, rounded to the nearest percent. For A500M use the following formula: 2.4t + 12, rounded to the nearest percent.

C) Applies to specified wall thicknesses (t) equal to or greater than 0.120 in. [3.05mm]. For lighter specified wall thicknesses, the minimum elongation values shall be by agreement with the manufacturer.

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

**Marking** : Hexagonal Type

**Packing** : Online stenciling as per the standard & customer requirement.