



ASTM A500

COLD-FORMED ERW STRUCTURAL AND MECHANICAL STEEL TUBING



SQUARES & RECTANGLES IN GRADES A and B

GENERAL INFORMATION ON MARUICHI ASTM A500 CARBON STEEL TUBING

DESCRIPTIONS:	<p>Maruichi A500 tubing is available in two grades A and B:</p> <p>Grade A TubingPickled hot-rolled steel and/or cold-rolled steel ("semi-bright" steel).</p> <p style="text-align: center;">Grade A tubing has square outside corner radii of less than three times the specified wall thickness.</p> <p>Grade B Tubing "black" hot-rolled steel with normal outside corner radii.</p>												
APPLICATIONS:	<p>Ordinary structural/mechanical uses as follows:</p> <p>Grade A Tubing appliance, furniture, leisure and playground equipment, ornamental and commercial structures, etc.</p> <p>Grade B Tubing structural columns and beams, heavy machinery framework, transportation equipment framework, farming and industrial equipment, guard and bridge railing, scaffolding, sign and advertisement posts, pallets and container frames, material handling equipment, stacking racks, etc.</p> <p>Special-purpose tubing, such as R.O.P.S. (roll over protective structure) tubing, may also be made available. Contact us with details of your specific requirements.</p>												
WELD AREA CONDITION:	<p>The tubing normally furnished "as-welded" without removal of inside flash.</p>												
END FINISH:	<p>The tubing ends are square cut, with outside burr held to a minimum.</p>												
IDENTIFICATION MARKING:	<p>Grade A Tubing: Each length is not stenciled, but the following information is marked on a tag attached to each lift bundle:</p> <div style="text-align: center;"> <p>1 2 MAC ASTM A500A</p> </div> <p>Grade B Tubing: Tubing with longest sides of 4 in. and smaller is not stenciled but identified with the following information marked on a tag attached to each lift bundle, while tubing with longest side over 4 in. is stenciled with the same information:</p> <div style="text-align: center;"> <p>1 2 3 4 5 6 MAC ASTM A500B 10"x10"x0.500" 123456 '99 HT A001</p> <p>1 Trade Mark 2 Grade Letter 3 Size 4 Control Number 5 Year of Production 6 Heat Number</p> </div>												
STANDARD PACKING:	<p>Grade A Tubing steel banded.</p> <p>Grade B Tubing in bare bundle, steel banded, or loose (in bulk). (For standardized number of lengths to be bundled into lift of a given size, please refer to the size tables in the following pages.)</p>												
AVAILABLE SIZE:#	<table border="0"> <tr> <td>Grade A Tubing</td> <td>- Square</td> <td>- 1/2" x 1/2" x 0.047" through 2" x 2" x 0.120"</td> </tr> <tr> <td></td> <td>- Rectangle</td> <td>- 1" x 1/2" x 0.063" through 1" x 3" x 0.120"</td> </tr> <tr> <td>Grade B Tubing</td> <td>- Square</td> <td>- 1-1/2" x 1-1/2" x 0.095" through 10" x 10" x 0.500"</td> </tr> <tr> <td></td> <td>- Rectangle</td> <td>- 1" x 2" x 0.120" through 12" x 8" x 0.500"</td> </tr> </table>	Grade A Tubing	- Square	- 1/2" x 1/2" x 0.047" through 2" x 2" x 0.120"		- Rectangle	- 1" x 1/2" x 0.063" through 1" x 3" x 0.120"	Grade B Tubing	- Square	- 1-1/2" x 1-1/2" x 0.095" through 10" x 10" x 0.500"		- Rectangle	- 1" x 2" x 0.120" through 12" x 8" x 0.500"
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STANDARD LENGTHS:	<p>Tubing sizes 2" x 2" x 0.120" and smaller or 2-1/2" x 1-1/2" x 0.120" and smaller - uniform mill lengths of 20ft. and 24ft.</p> <p>Tubing sizes 1-1/2" x 1-1/2" x 0.095" through 3" x 3" x 0.250" or Tubing sizes 1" x 2" x 0.120" through 2" x 4" x 0.250" or - uniform mill lengths of 20ft., 24ft. and 40ft. (48ft. maximum)</p> <p>Tubing sizes 4" x 4" x 0.120" through 10" x 10" x 0.500" (12" x 8" x 0.500") - uniform mill lengths of 20ft., 40ft. and 48ft. (60ft. maximum)</p>												

*Unless otherwise agreed, the option between "pickled hot-rolled steel" or "cold-rolled steel" to be used for any given size of your "semi-bright" tubing order is understood to be left to Maruichi.



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SQUARES & RECTANGLES IN GRADES A and B

EXCERPTS FROM ASTM A500 SPECIFICATION

TOLERANCES IN OUTSIDE DIMENSIONS:	<u>Largest Outside Dimension, across flats, in. (mm)</u>	<u>Tolerance, plus and minus, in. (mm)</u>	
	2-1/2 (63.5) and under Over 2-1/2 to 3-1/2 (63.5 to 88.9), include Over 3-1/2 to 5-1/2 (88.9 to 139.7), include Over 5-1/2 (139.7) (Tolerance include allowance for convexity or concavity.)	0.020 (0.51) 0.025 (0.64) 0.030 (0.76) 1 percent	
TOLERANCES IN WALL THICKNESS:	Plus and minus 10% of nominal thickness, exclusive of weld area.		
TOLERANCES IN LENGTH:	Plus 2 in. (50.8 mm) and minus zero on ordered lengths, (This is Maruichi's private standard tolerance. If any closer tolerance is desired, please be sure to specify that in your inquiries or orders.)		
TOLERANCES IN STRAIGHTNESS	$\frac{1}{8} \text{ in.} \times \frac{\text{Total Length in ft.}}{5}$		
SQUARENESS OF SIDES:	Adjacent sides may deviate from 90° by plus and minus 2° max.		
CORNER RADII:	The radius of any outside corner shall not exceed three times the specified wall thickness.		
TOLERANCES IN TWIST:	<u>Specified Dimension of Longest Side in. (mm)</u>	<u>Maximum Twist in 3 ft., in.</u>	<u>Maximum Twist in 1 m, mm</u>
	1-1/2 (38.1) and under Over 1-1/2 to 2-1/2 (38.1 to 63.5), include Over 2-1/2 to 4 (63.5 to 101.6), include Over 4 to 6 (101.6 to 152.4), include Over 6 to 8 (152.4 to 203.2), include Over 8 (203.2)	0.050 0.062 0.075 0.087 0.100	1.39 1.72 2.09 2.42 2.78
CHEMICAL REQUIREMENTS (HEAT ANALYSIS)		<u>Grade A</u>	<u>Grade B</u>
	Carbon, max., % Manganese, max., % Phosphorus, max., % Sulfur, max., %	0.26 - 0.035 0.035	0.26 - 0.035 0.035
MECHANICAL PROPERTIES:		<u>Grade A</u>	<u>Grade B</u>
	Tensile strength, min., psi (MPa): Yield point, min., psi (MPa): Elongation:	45,000 (310) 39,000 (269) As specified in A500 specification.	58,000 (400) 46,000 (317) As specified in A500 specification.