



A500 Specification Comparison (Round Tubing)

| ASTM A500 Round Tubing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|--|--------------------------|----------------------|--------------------|---------|-------------------|----------------|-------|----------|--------------|---------------|------------------|---------------|-------------------|---------|---------|---------|------|------|--------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|------|------|-----|------|
| Chemical Composition | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th rowspan="3"></th> <th colspan="4" style="text-align: center;">Composition, %</th> </tr> <tr> <th colspan="2" style="text-align: center;">Grades A and B</th> <th colspan="2" style="text-align: center;">Grades C</th> </tr> <tr> <th style="text-align: center;">Heat Analysis</th> <th style="text-align: center;">Product Analysis</th> <th style="text-align: center;">Heat Analysis</th> <th style="text-align: center;">Product Analysis</th> </tr> </thead> <tbody> <tr> <td>C Max</td> <td style="text-align: center;">0.26</td> <td style="text-align: center;">0.30</td> <td style="text-align: center;">0.23</td> <td style="text-align: center;">0.30</td> </tr> <tr> <td>Mn Max</td> <td style="text-align: center;">1.35</td> <td style="text-align: center;">1.40</td> <td style="text-align: center;">1.35</td> <td style="text-align: center;">1.40</td> </tr> <tr> <td>P Max</td> <td style="text-align: center;">0.035</td> <td style="text-align: center;">0.045</td> <td style="text-align: center;">0.035</td> <td style="text-align: center;">0.045</td> </tr> <tr> <td>S Max</td> <td style="text-align: center;">0.035</td> <td style="text-align: center;">0.045</td> <td style="text-align: center;">0.035</td> <td style="text-align: center;">0.045</td> </tr> <tr> <td>Cu Min*</td> <td style="text-align: center;">0.20</td> <td style="text-align: center;">0.18</td> <td style="text-align: center;">0.2</td> <td style="text-align: center;">0.18</td> </tr> </tbody> </table> <p style="margin-left: 40px;">*If copper-containing steel is specified in the purchase order.</p> | | Composition, % | | | | Grades A and B | | Grades C | | Heat Analysis | Product Analysis | Heat Analysis | Product Analysis | C Max | 0.26 | 0.30 | 0.23 | 0.30 | Mn Max | 1.35 | 1.40 | 1.35 | 1.40 | P Max | 0.035 | 0.045 | 0.035 | 0.045 | S Max | 0.035 | 0.045 | 0.035 | 0.045 | Cu Min* | 0.20 | 0.18 | 0.2 | 0.18 |
| | Composition, % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Grades A and B | | Grades C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Heat Analysis | Product Analysis | Heat Analysis | Product Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C Max | 0.26 | 0.30 | 0.23 | 0.30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mn Max | 1.35 | 1.40 | 1.35 | 1.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P Max | 0.035 | 0.045 | 0.035 | 0.045 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S Max | 0.035 | 0.045 | 0.035 | 0.045 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cu Min* | 0.20 | 0.18 | 0.2 | 0.18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tensile Requirements | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Shaped structural Tubing</th> <th style="text-align: center;">Grade A</th> <th style="text-align: center;">Grade B</th> <th style="text-align: center;">Grade C</th> </tr> </thead> <tbody> <tr> <td>TS (Mpa) MIN</td> <td style="text-align: center;">45000</td> <td style="text-align: center;">58000</td> <td style="text-align: center;">62000</td> </tr> <tr> <td>YS (Mpa) MIN</td> <td style="text-align: center;">33000</td> <td style="text-align: center;">42000</td> <td style="text-align: center;">46000</td> </tr> <tr> <td>EL (%) in 2in MIN</td> <td style="text-align: center;">25 (*1)</td> <td style="text-align: center;">23 (*2)</td> <td style="text-align: center;">21 (*3)</td> </tr> </tbody> </table> <p style="margin-left: 40px;">(*1) Specified wall thickness(t) is lighter than 0.120 in, Elongation(%) = 56t + 17.5</p> <p style="margin-left: 40px;">(*2) Specified wall thickness(t) is lighter than 0.180 in, Elongation(%) = 61t + 12</p> <p style="margin-left: 40px;">(*3) Specified wall thickness(t) is lighter than 0.120 in, the minimum elongation values shall be by agreement with the manufacturer.</p> | Shaped structural Tubing | Grade A | Grade B | Grade C | TS (Mpa) MIN | 45000 | 58000 | 62000 | YS (Mpa) MIN | 33000 | 42000 | 46000 | EL (%) in 2in MIN | 25 (*1) | 23 (*2) | 21 (*3) | | | | | | | | | | | | | | | | | | | | | | |
| Shaped structural Tubing | Grade A | Grade B | Grade C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TS (Mpa) MIN | 45000 | 58000 | 62000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| YS (Mpa) MIN | 33000 | 42000 | 46000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EL (%) in 2in MIN | 25 (*1) | 23 (*2) | 21 (*3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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> <p style="text-align: center;"> ASTM A-500 A</p> <p>Grade B and C Tubing: ● A 5 0 0</p> <p style="text-align: center;">(1) (2) (3) (4) (5) (6) (7)</p> <p style="text-align: center;">MAC ASTM A500B 3×3×0.120 '07 C1234</p> <p style="font-size: small; text-align: center;">(1) Company name (2) Standard (3) Specification (4) Size (5) wall thickness (6) year (7) Heat No.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| End Finish | The Tubing ends are square cut, with outside burr held to a minimum. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Available Size | OD 0.840" through OD 6-5/8" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tolerance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outside Dimension | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">O. D Range</th> <th style="text-align: center;">Tolerance (inches)**</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.900" and Smaller</td> <td style="text-align: center;">±0.5%</td> </tr> <tr> <td style="text-align: center;">2.000" and Larger</td> <td style="text-align: center;">±0.75%</td> </tr> </tbody> </table> <p style="margin-left: 40px;">* Measured at least 2" from cut end of tubing</p> | O. D Range | Tolerance (inches)** | 1.900" and Smaller | ±0.5% | 2.000" and Larger | ±0.75% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| O. D Range | Tolerance (inches)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.900" and Smaller | ±0.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.000" and Larger | ±0.75% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wall Thickness | ±10% of Nominal Wall Thickness | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Length | <p>Plus 2 in. (50.8mm) and minus zero on ordered lengths,</p> <p>(This is Maruichi's private standard tolerance. If any closer tolerance is desired, please be sure to specify that in your inquiry or orders.)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Straightness | Max(Inches) = (Length(ft) / 5) x 1/8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |