ASTM A178 Welded Steel Boiler and Superheater Tube

ASTM A178/A178M, ASME SA178/SA178M is the standard applicable to electric-resistance-welded carbon steel and carbon manganese steel boiler and superheater tubes.


SA178 tubing sizes and thicknesses usually furnished to this specification are 1/2 to 5 in. [12.7 to 127 mm] in outside diameter and 0.035 to 0.360 in. [0.9 to 9.1 mm], inclusive, in minimum wall thickness. Tubing having other dimensions may be furnished, provided such tubes comply with all other requirements of this specification.
Applications:
ASTM A178 tubes are a kind of frequently-used tubes in our life, they are mainly used in manufacturing heating pipelines, containers, coal-saving devices, superheaters, arch superheated tube, airway tube etc.

Quick Detail:
Standard: ASTM A178, ASME SA178
Grade: Grade A, Grade C, Grade D
Technique: Electric-Resistance-Welded
Delivery Condition: Annealed, Normalized, Tempered, Heat Treatment, BK, BKS, BKW, NBK, GBK
Section Shape: Round
Surface Treatment: Varnish
Size: (mm)
OD: 12.7mm to 127mm
Wall thickness: 1.5mm to 6.0mm
Length: 6m-25m
Ends: Plain ends or bevel ends

Test and other terms:
1. Hydrostatic or Nondestructive Electric Test
2. Heat Treatment: according to Standard
4. Grain Size: According to standard
5. Sampling: flattening, flaring, grain size, Marking
### Chemical compositions (%)

<table>
<thead>
<tr>
<th>Element</th>
<th>Grade A, Low-Carbon Steel</th>
<th>Grade C, Medium-Carbon Steel</th>
<th>Grade D, Carbon-Manganese Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>0.06-0.18</td>
<td>0.35max</td>
<td>0.27max</td>
</tr>
<tr>
<td>Manganese</td>
<td>0.27-0.63</td>
<td>0.08max</td>
<td>1.00-1.50</td>
</tr>
<tr>
<td>Phosphorus, max</td>
<td>0.035</td>
<td>0.035</td>
<td>0.03</td>
</tr>
<tr>
<td>Sulfur, max</td>
<td>0.035</td>
<td>0.035</td>
<td>0.015</td>
</tr>
<tr>
<td>Silicon</td>
<td>...</td>
<td>...</td>
<td>0.01 min</td>
</tr>
</tbody>
</table>

### A178 Mechanical Properties

<table>
<thead>
<tr>
<th></th>
<th>Grade A</th>
<th>Grade C</th>
<th>Grade D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile strength, min, ksi [MPa]</td>
<td>47[325]</td>
<td>60[415]</td>
<td>70[485]</td>
</tr>
<tr>
<td>Elongation in 2 in. or 50mm, min, %</td>
<td>35</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>For longitudinal strip tests a deduction for</td>
<td>1.50A</td>
<td>1.50A</td>
<td>1.50A</td>
</tr>
<tr>
<td>Each 1/32-in[0.8mm] decrease in wall thickness below 5/16in. [8mm]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From the basic minimum elongation of the following percentage points shall be made</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Outside Diameter and Wall thickness Tolerance:

<table>
<thead>
<tr>
<th>Outside Diameter tolerance</th>
<th>Wall thickness tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD &lt; 50</td>
<td>±0.05mm</td>
</tr>
<tr>
<td>OD &gt; 50</td>
<td>±1%</td>
</tr>
<tr>
<td>S &lt; 4mm</td>
<td>±12.5%</td>
</tr>
<tr>
<td>4-20mm</td>
<td>+15/-12.5%</td>
</tr>
<tr>
<td>S≥20mm</td>
<td>±12.5%</td>
</tr>
</tbody>
</table>

### Note:
- Mill test certificates will be issued according to EN10204.3
- The tubes Shall be Seamless, and the testing shall be as per A 450 / A450M.
- Application: apply to the heat exchangers, condensers and heat transfer equipment and similar pipe.

**Packing:**

- Packed in wooden box or bundles protected with plastic paper, and suitably protected for seaworthily delivery or as requested.
- The Product marking shall include the ASTM A178 or ASME SA178, size, heat no., Lot No. and Manufacture name or logo.
Read more information of this products

- **ASTM A178 Welded steel pipe**

Related products

- **Carbon steel**
  - ASTM A179 / ASME SA179 Seamless tubes
  - ASTM A192 / ASME SA192 Seamless boiler tubes
  - ASTM A210 / ASME SA210 GRADE A1 Seamless tubes
  - ASTM A210 / ASME SA210 GRADE C Seamless tubes

- **Alloy steel**
  - ASTM A213 T11 T12 T22 Seamless alloy tubes
  - ASTM A 213/A 213M T2, T5, T5b, T9, T91 Seamless Alloy Steel tubes
  - ASTM A335 P1, P2, P5, P9 Seamless alloy pipes
  - ASTM A335 P11, P12, P22, P91 seamless alloy pipes
  - ASTM A209 ASME SA209 T1 tubes

- **Stainless steel and Duplex**
  - ASTM A269 Stainless Steel Tubes
  - ASTM A213 Stainless Steel Tubes
  - ASTM A249 Stainless Steel Tubes
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