

ASTM - A214/A214M

SPECIFICATION FOR ELECTRIC-RESISTANCEWELDED CARBON STEEL HEAT-EXCHANGER AND CONDENSER TUBES

This specification covers minimum-wall-thickness, electric-resistance-welded, carbon steel tubes to be used for heat exchangers, condensers, and similar heat-transfer apparatus.

The tubing sizes usually furnished to this specification are to 3 in. [76.2 mm] in outside diameter, inclusive.

Tubing having other dimensions may be furnished, provided such tubes comply with all other requirements of this specification.

Mechanical property requirements do not apply to tubing smaller than 1/8 in. [3.2 mm] in inside diameter or 0.015 in. [0.4 mm] in thickness.

The purchaser shall specify in the order the outside diameter and minimum wall thickness. The inside diameter shall not be specified.

A. Heat Treatment :-

1. After welding, all tubes shall be heat treated at a temperature of 1650°F [900°C] or higher and followed by cooling in air or in the cooling chamber of a controlled atmosphere furnace.
2. Cold drawn tubes shall be heat treated after the final cold-draw pass at a temperature of 1200°F [650°C] or higher.

B. Chemical Composition :-

The steel shall conform to the following requirements as to chemical composition:

Carbon, max, %	0.18
Manganese, %	0.27–0.63
Phosphorus, max, %	0.035
Sulfur, max, %	0.035

C. Hardness Requirements :-

1. The tubes shall have a hardness number not exceeding 72 HRB.

D. Mechanical Tests Required :-

1. Flattening Test.
2. Flange Test.
3. Reverse Flattening Test :- One reverse flattening test shall be made on a specimen from each 1500 ft [450 m] of finished tubing.
4. Hardness Test.
5. Hydrostatic or Non-destructive Electric Test :- Each tube shall be subjected to either the hydrostatic or the non-destructive electric test. The purchaser may specify which test is to be used.

Keyword

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