

ASTM - A192/A192M

SPECIFICATION FOR SEAMLESS CARBON STEEL BOILER TUBES FOR HIGH-PRESSURE SERVICE

This specification covers minimum-wall thickness, seamless carbon steel boiler and superheater tubes for high pressure service.

The tubing sizes and thicknesses usually furnished to this specification are 1/2 in. to 7 in. [12.7 to 177.8 mm] outside diameter and 0.085 to 1.000 in. [2.2 to 25.4 mm], inclusive, in minimum wall thickness.

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] inside diameter or 0.015 in. [0.4 mm] thickness.

A. Manufacture

1. Tubes shall be made by the seamless process and shall be either hot-finished or coldfinished, as specified.

B. Heat Treatment

1. Hot-finished tubes need not be heat treated. Cold finished tubes shall be heat treated after the final cold finished at a temperature of 1200°F [650°C] or higher.

C. Chemical Composition

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

	Carbon, %		0.06–0.18
	Manganese, %		0.27–0.63
	Phosphorus, max, %		0.035
Sulfur, max, %	0.035	Silicon, max, %	0.25

D. Tensile Requirements :-

The material shall conform to the requirements as to tensile properties given in Table 2.

E. Elongation :-

The minimum longitudinal elongation in 2 in. [50 mm] given in Table 2.

Tensile strength, min, ksi [MPa]	47 [325]
Yield strength, min, ksi [MPa]	26 [180]
Elongation in 2 in. or 50 mm, min, %	35

F. Hardness Requirements

The tubes shall have a hardness number not exceeding the following:

	<u>Brinell Hardness Number</u>	<u>Rockwell Hardness Number</u>
(Tubes 0.200 in. [5.1 mm] and over in wall thickness)	(Tubes less than 0.200 in. [5.1 mm] in wall thickness)	(Tubes less than 0.200 in. [5.1 mm] in wall thickness)
	137 HB	77 HRB

G. Mechanical Tests Required 1. Flattening
Test.

2. Flaring Test.
3. Hardness Test.
4. Hydrostatic Test.

➤ **Keyword**

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