

ASME SA 178 TUBE SPECIFICATIONS

GENERAL CHARACTERISTICS

This specification covers minimum-wall-thickness, electric-resistance-welded tubes made of carbon steel and carbon-manganese steel intended for use as boiler tubes, boiler flues, superheater flues, and safe ends. The [ASTM SA 178 tube](#) 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 0.320 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. 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.

ASME SA 178 CHEMICAL COMPOSITION FOR TUBE:

Designation		%C	%Mn	%S	%P	%Si
Grade A, Low-Carbon Steel	Min	0.06	0.27	--	--	--
	Max	0.18	--	0.035	0.035	--
Grade C, Medium-Carbon Steel	Min	--	0.80	--	--	--
	Max	0.035	7.50	0.035	0.035	--
Grade D, Carbon-Manganese Steel	Min	--	1.00	--	--	0.10
	Max	0.027	1.15	0.015	0.030	--

HEAT TREATMENT:

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. Cold-drawn tubes shall be heat treated after the final cold-draw pass at a temperature of 1200° [650°C] or higher.

MECHANICAL PROPERTIES OF ASTM SA 178 TUBE:

Mechanical properties	Grade	UTS ksi (MPa)	YS ksi (MPa)	%EL
ASTM SA 178	A	325	180	35
ASTM SA 178	C	415	255	30
ASTM SA 178	D	485	275	30

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