

ASTM A210 / ASME SA210 Grade A1 Seamless Tubes Specification

Carbon Steel Boiler & Superheater Tubes

Keywords: ASTM A210, ASME SA210, Grade A1, Grade C, Seamless Tubes, Carbon Steel Boiler Tubes, Superheater Tubes

1. ASTM A210 / ASME SA210 Standard Overview

ASTM A210 / ASME SA210 is the standard specification for seamless medium-carbon steel boiler and superheater tubes intended for high-temperature and high-pressure service. The most commonly supplied grades under this standard are Grade A1 and Grade C.

2. Grade A1 Carbon Steel Material Description

ASTM A210 Grade A1 is a seamless carbon steel tube offering good strength, excellent heat resistance, and reliable weldability. It is widely used in medium-temperature boiler and heat exchanger applications.

3. Chemical Composition of ASTM A210 Grade A1 (wt. %)

Grade	C	Mn	Si	P	S
Grade A1	0.27 max	0.93 max	0.10 min	0.035 max	0.035 max

4. Mechanical Properties & Hardness

Property	ASTM A210 Grade A1
Tensile Strength	≥ 415 MPa
Yield Strength	≥ 255 MPa
Elongation	≥ 30 %
Hardness	≤ 79 HRB

5. Typical Applications of ASTM A210 Grade A1

ASTM A210 Grade A1 seamless tubes are commonly used in the following applications:

- Power plant boilers
- Industrial boilers
- Superheaters and reheaters
- Heat exchangers and condensers
- Petrochemical and refinery equipment

6. Size Range & Manufacturing

Outside Diameter: 12.7 mm – 114.3 mm

Wall Thickness: 1.2 mm – 12.7 mm

Length: Random, Fixed Length, or as required

Manufacturing Process: Seamless, Hot Finished or Cold Drawn

7. ASTM A210 Grade A1 vs Grade C Comparison

Item	Grade A1	Grade C
Carbon Content	0.27 max	0.35 max
Tensile Strength	≥ 415 MPa	≥ 485 MPa
Yield Strength	≥ 255 MPa	≥ 275 MPa
Elongation	≥ 30 %	≥ 20 %
Typical Service	Medium temperature	Higher temperature & pressure
Applications	Boilers, Heat Exchangers	High-pressure Boilers, Superheaters

8. Inspection & Certification

Chemical analysis, mechanical testing, flattening test, hydrostatic or non-destructive testing are performed according to ASTM A210 / ASME SA210 requirements. EN 10204 3.1 Mill Test Certificate is supplied with each shipment.

9,Products

ASTM A210 / ASME SA210 Grade A1 Seamless tube

ASTM A210 / ASME SA210 Grade C Seamless tube

