# ASTM A192/ ASME SA192

## Standard Specification for Seamless Carbon Steel Boiler Tubes for High-Pressure Service[1]

ASTM A192 standard is issued under the fixed designation A 192/A 192M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.
A superscript epsilon (e) indicates an editorial change since the last revision or reapproval.

## Abstract

This guide covers standard specifications for minimum-wall-thickness, seamless carbon steel boiler and superheater tubes for high-pressure service. The steel shall conform to the required chemical composition for carbon, manganese, phosphorus, sulfur, and silicon. The tubes shall have a hardness number not exceeding a specific value. The following mechanical tests shall be conducted, namely: flattening test; flaring test; hardness test; and hydrostatic test.

This abstract is a brief summary of the referenced standard. It is informational only and not an official part of the standard; the full text of the standard itself must be referred to for its use and application. ASTM does not give any warranty express or implied or make any representation that the contents of this abstract are accurate, complete or up to date.

## Scope

1.1 This specification2 covers minimum-wall-thickness, seamless carbon steel boiler and superheater tubes for high-pressure service.

1.2 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.

1.3 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.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. The inch-pound units shall apply unless the “M” designation of this specification is specified in the order.

1.5 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization

Technical Barriers to Trade (TBT) Committee.

### Chemical Compositions (%) of ASTM A192

| Mfg. Process | Chemical composition(%) | | | | |
|---|---|---|---|---|---|
| | C | Si | Mn | P | S |
| S | 0.06~0.18 | 0.25Max | 0.27~0.63 | 0.035Max | 0.035Max |

### Mechanical Properties of ASTM A192

| Elongation % | Tensile Test MPa or N/mm2 | |
|---|---|---|
| A | Min Yield point | Tensile Strength |
| 35 | 180 | 325 |

### ASTM A192 Steel pipe for Boiler Hardness Requirement:

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

*T.S.: tensile strength; *Y.S.: yield strength; *El.: elongation.

*The Brinell Hardness number applies to ASTM A192 tubes 0.200″ [5.1 mm] and over in wall thickness.

*The Rockwell Hardness number applies to ASTM A192 tubes less than 0.200″ [5.1 mm] in wall thickness.

*Mechanical properties don’t apply to tubing smaller than 1/8″ [3.2 mm] inside diameter or 0.015″ [0.4 mm] thickness.

### Carbon Steel ASTM A192 / ASME SA192 Tubes Equivalent Grades

ASTM A 192 boiler tube equivalent EN 10216-2, DIN 17175, BS 3059 Part II, NF A 49-213, NBR 5594 ASTM (American Society for Testing Materials standard) A192 and ASME (American Society of Mechanical Engineers standards) SA192. Equivalent Materials 1010, St35.8, 360. FASTWELL has standard specifications for minimum-wall-thickness, seamless carbon steel boiler and super heater

tubes for high-pressure service.

| Grade | | ASTM A192 / ASME SA192 |
|---|---|---|
| UNS No | | K01201 |
| Old British | BS | CFS 320 |
| German | No | 17175 |
| | Number | 1.0305 |
| Belgian | | 837 |
| Japanese JIS | | D3563 / G3461 |
| French | | A49-213 |
| Italian | | 5462 |

## Ordering Information

Orders for ASTM A192 Seamless carbon steel tubes should include the following, as required, to describe the desired material adequately:

- Quantity (feet, meters, or number of lengths),
- Name of material (seamless tubes),
- Manufacture (hot-finished or cold-finished),
- Size (outside diameter and minimum wall thickness),
- Length (specific or random),
- Optional requirements,
- Test report required (see section on Certification of Specification A 450/A 450M),
- Specification designation,
- Special requirements.

## 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.

# Boiler tube SA192

Mark



Measurement

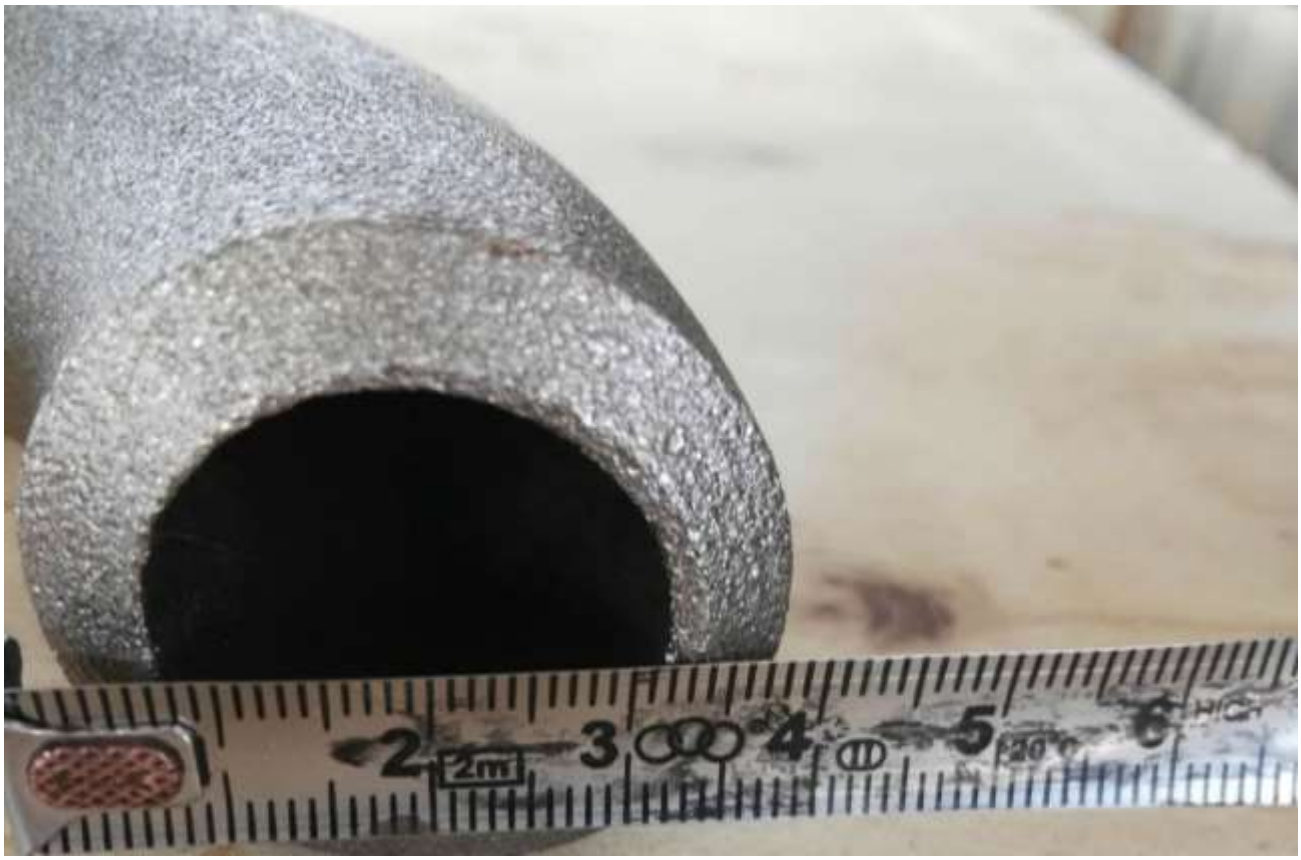

4 5 6 7 8 9 600 1 2 3 4


8890
Inch/mm
OFF
ON
ZERO

Packing

# Buttweld elbows SA192

Fittings all




Fittings out diameter

Fittings wall thickness

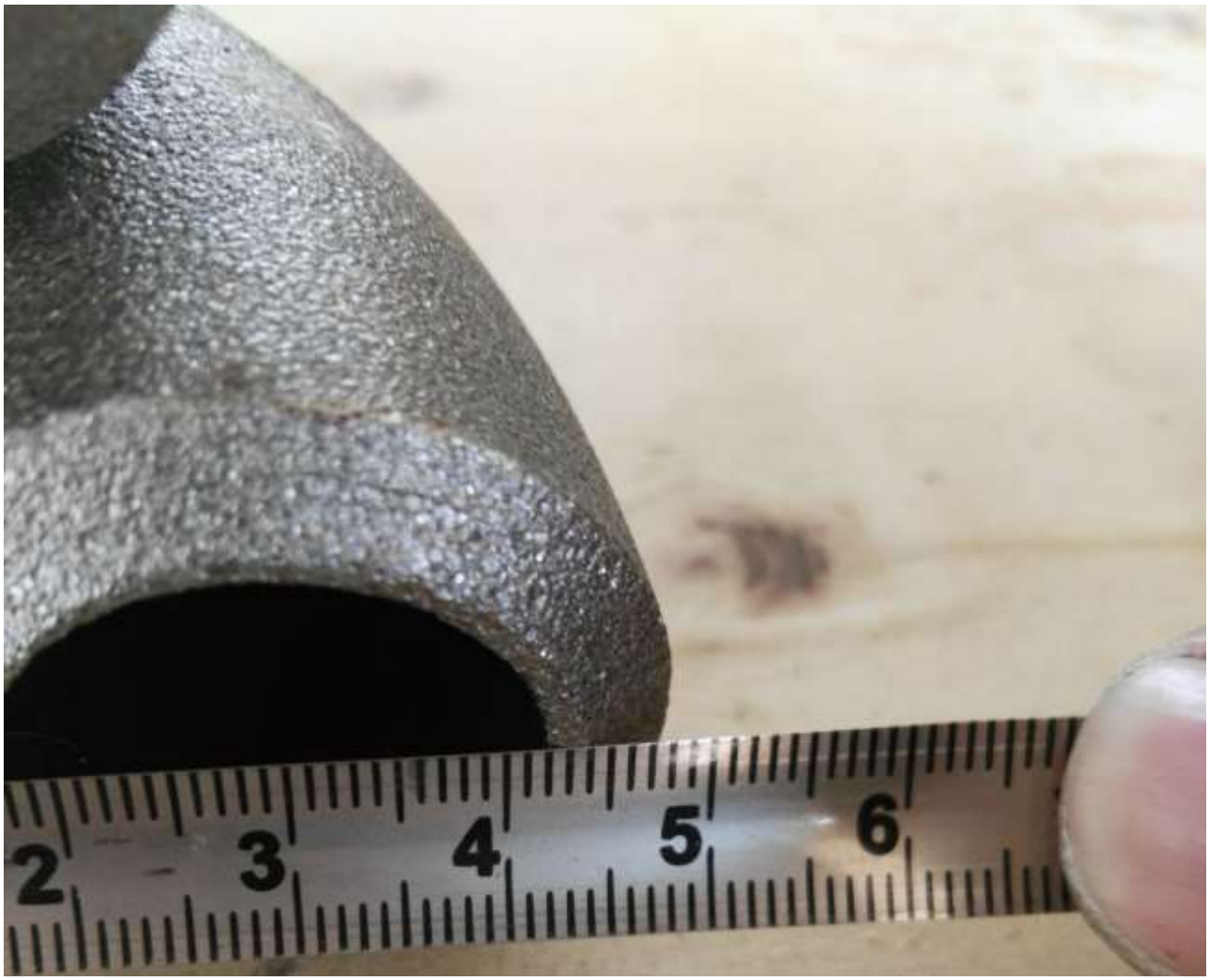

Item2 elbow marking

Item2 elbows all

Item 3 bend marking


item3 Centre lined radius_111mm detail

item3 centre lined radius-111mm full




item4 centre lined radius_144mm detail

item4 centre lined radius_144mm full

## Marking:

- Pipes are supplied with marking according to standard and customer request.
- Marking is paint on the ends of pipes.
- The same data, as well as additional information per customer's request, is indicated on the bundle's tags.



## Delivery:

**Pipes are supplied in hexagonal bundles or round bundles tied with steel strip.**

- Weight of bundle – up to 5000 kg upon request of customer.
- Each bundle is furnished with three tags.

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