



Standard Specification for Seamless and Electric-Welded Low-Alloy Steel Tubes¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification² covers minimum-wall-thickness, seamless and electric-resistance welded, low-alloy steel tubes for pressure containing parts such as economizers or other applications where corrosion resistance is important.

1.2 The tubing sizes and thicknesses usually furnished to this specification are ½ to 5 in. [12.7 to 127 mm] in outside diameter and 0.035 to 0.500 in. [0.9 to 12.7 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 ¼ in. [3.2 mm] in inside diameter or 0.015 in. [0.4 mm] in thickness.

1.4 An optional supplementary requirement is provided and, when desired, shall be so stated in the order.

1.5 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.

2. Referenced Documents

2.1 ASTM Standards:

E 213 Practice for Ultrasonic Examination of Metal Pipe and Tubing³

E 273 Practice for Ultrasonic Examination of Longitudinal Welded Pipe and Tubing³

A 450/A 450M Specification for General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes³

3. Ordering Information

3.1 Orders for material under this specification shall include the following, as required, to describe the desired material adequately:

3.1.1 Quantity (feet, metres, or number of lengths),

3.1.2 Name of material (seamless or electric-resistance-welded tubes),

3.1.3 Grade (Table 1),

3.1.4 Manufacture (hot finished or cold finished),

3.1.5 Size (outside diameter and minimum wall thickness),

3.1.6 Length (specific or random),

3.1.7 Optional requirements (hydrostatic or electric test, 13.7),

3.1.8 Test report required (see Certification Section of Specification A 450/A 450M),

3.1.9 Specification designation, and

3.1.10 Special requirements and any supplementary requirements selected.

4. Manufacture

4.1 Tubes made by the seamless process may be hot finished or cold finished.

5. Heat Treatment

5.1 All tubes shall be normalized or given such heat treatment as may be necessary to conform to the requirements of this specification.

6. Chemical Composition

6.1 The steel shall conform to the requirements as to chemical composition prescribed in Table 1.

7. Product Analysis

7.1 An analysis of either one billet, one length of flat-rolled stock or one tube shall be made from each heat. The chemical composition thus determined shall conform to the requirements specified.

7.2 If the original test for product analysis fails, retests of two additional billets, lengths of flat-rolled stock, or tubes shall be made. Both retests, for the elements in question shall meet the requirements of the specification; otherwise all remaining material in the heat or lot (Note 1) shall be rejected or, at the

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² For ASME Boiler and Pressure Vessel Code applications see related Specification SA-423 in Section II of that Code.

³ Annual Book of ASTM Standards, Vol 03.03.