



Standard Specification for Steel Tubes, Low-Carbon, Tapered for Structural Use¹

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1. Scope

1.1 This specification covers three grades of seam-welded, round, tapered steel tubes for structural use. Grades A and B are of low-carbon steel composition and Grade C is of weather-resistant steel composition.

1.2 This tubing is produced in welded sizes in a range of diameters from 2 $\frac{3}{8}$ to 30 in. (63.5 to 762.0 mm) inclusive. Wall thicknesses range from 0.1046 to 0.375 in. (2.66 to 9.53 mm). Tapers are subject to agreement with the manufacturer.

1.3 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 588/A588M Specification for High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick³

A 606 Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance²

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

G 101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels⁴

3. Ordering Information

3.1 The inquiry and order should indicate the following:

3.1.1 Large and small diameters (in.), length (ft), wall thickness (in.), and taper (in./ft);

3.1.2 (see Table 1 and Table 2);

3.1.3 Extra test material requirements, if any; and

3.1.4 Supplementary requirements, if any.

4. General Requirements for Delivery

4.1 Required date of shipment or date of receipt, and

4.2 Special shipping instructions, if any.

¹ This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel, and Related Alloys, and is the direct responsibility of Subcommittee A01.09 on Carbon Steel Tubular Products.

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² Annual Book of ASTM Standards, Vol 01.03.

³ Annual Book of ASTM Standards, Vol 01.04.

⁴ Annual Book of ASTM Standards, Vol 03.02.

5. Manufacture

5.1 Tube steel shall be hot-rolled aluminum-semikilled or fine-grained killed sheet or plate manufactured by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

5.2 Tubes shall be made from trapezoidal sheet or plate that is preformed and then seam welded. Tubes shall be brought to final size and properties by roll compressing cold on a hardened mandrel.

6. Chemical Composition

6.1 Steel shall conform to the requirements for chemical composition as prescribed in Table 1 and chemical analysis shall be in accordance with Test Methods, Practices, and Terminology A 751.

6.2 For Grade C material, the atmospheric corrosion-resistance index, calculated on the basis of the chemical composition of the steel, as described in Guide G 101, shall be 6.0 or higher.

NOTE 1—The user is cautioned that the Guide G 101 predictive equation for calculation of an atmospheric corrosion-resistance index has been verified only for the composition limits stated in that guide.

6.3 When required by the purchase order, the manufacturer shall supply guidance concerning corrosion resistance that is satisfactory to the purchaser.

7. Mechanical Properties

7.1 Tension Test:

7.1.1 *Requirements*—The material as represented by the test specimens shall conform to the requirements as to tensile properties as prescribed in Table 2.

7.1.2 *Number of Tests*—Two tension tests shall be made from each sample. One sample for testing shall be taken from the large end of one tube on each 100, or fewer, tubes in each thickness class as defined in Table 3.

7.1.3 *Test Locations and Orientations*—Samples shall be taken at least 1 in. (25 mm) from the longitudinal seam weld.

7.1.4 Test Method:

7.1.4.1 Tension tests shall be made in accordance with Test Methods and Definitions A 370. The yield strength corresponding to a permanent offset of 0.2 % of the gage length of the specimen or to a total extension of 0.5% of the gage length under load shall be determined in accordance with Test Methods and Definitions A 370.

7.1.4.2 The ultimate tensile strength shall be determined in