



Standard Specification for Cold-Drawn Buttweld Carbon Steel Mechanical Tubing¹

This standard is issued under the fixed designation A 512; 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 (ε) indicates an editorial change since the last revision or reapproval.

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

1. Scope

1.1 This specification covers cold-drawn buttweld carbon steel tubes for use as mechanical tubing.

1.2 This specification covers round, square, rectangular, and special shape mechanical tubing.

1.3 Round tube size ranges covered are outside diameters up to 3 ½ in. (88.9 mm) and wall thickness from 0.035 to 0.500 in. (0.89 to 12.70 mm).

1.4 Optional supplementary requirements are provided and, when desired, shall be so stated in the order.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

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

E 59 Practice for Sampling Steel and Iron for Determination of Chemical Composition³

2.2 Military Standards:

MIL-STD-129 Marking for Shipment and Storage⁴

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage⁴

2.3 Federal Standard:

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)⁴

3. Ordering Information

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

3.1.1 Quantity (feet, weight (Note 1), or number of lengths),

NOTE 1—The term “weight” is temporarily used in this specification because of established trade usage. The word is used to mean both “force” and “mass,” and care must be taken to determine which is meant in each case (SI unit for force = newton and for mass = kilogram).

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 03.05.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3.1.2 Name of material (buttweld carbon steel mechanical tubing),

3.1.3 Form (round, square, rectangular, special shape),

3.1.4 Condition, description and code letters (Section 5),

3.1.5 Grade, if required (Section 6),

3.1.6 Dimensions (round, Section 9 or square and rectangular, Section 10),

3.1.7 Length (round length, 9.2; square and rectangular length, 10.5),

3.1.8 Burr removal (Section 11),

3.1.9 Report of chemical analysis and products analysis, if required,

3.1.10 Individual supplementary requirements if required (S1 through S5),

3.1.11 Special requirements,

3.1.12 End use,

3.1.13 Specification designation,

3.1.14 Special marking (Section 15), and

3.1.15 Special packaging (Section 16).

4. Materials and Manufacture

4.1 The steel shall be made by any process.

4.2 If a specific type of melting is required by the purchaser, it shall be as stated on the purchase order.

4.3 The primary melting may incorporate separate degassing or refining, and may be followed by secondary melting, such as electroslag or vacuum-arc remelting. If secondary melting is employed, the heat shall be defined as all of the ingots remelted from a single primary heat.

4.4 Steel may be cast in ingots or may be strand cast. When steel of different grades is sequentially strand cast, identification of the resultant transition material is required. The producer shall remove the transition material by an established procedure that positively separates the grades.

4.5 Tubes shall be made by the furnace buttweld process.

4.6 Tubes shall be cold finished, either externally only (sunk) or externally and internally (mandrel drawn).

5. Condition

5.1 The purchaser shall specify in the order one of the following conditions:

MD (Mandrel Drawn)—No final thermal treatment

SD (Sink Drawn)—No final thermal treatment

MDSR—Mandrel Drawn and Stress Relieved

SDSR—Sink Drawn and Stress Relieved