



AEROSPACE MATERIAL SPECIFICATION

AMS4554™**REV. D**

Issued 1990-07
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Revised 2024-09

Superseding AMS4554C

Brass Tubing, Seamless,
66.5Cu - 33Zn - 0.45Pb,
Annealed

(Composition similar to UNS C33000)

RATIONALE

AMS4554D results from a Five-Year Review and update of this specification with changes to update general agreement language to prohibit unauthorized exceptions (see 3.8, 5.1.1, 8.4), relocate Definitions (see 2.3), and update Applicable Documents (see Section 2), Composition (see 3.1), Tolerances (see 3.6.1), column title in Table 8, Tensile Tests (see 4.4.1), and Ordering Information (see 8.5).

1. SCOPE

1.1 Form

This specification covers one grade of brass in the form of seamless tubing (see 8.5).

1.2 Application

This tubing has been used typically for parts requiring a combination of moderate strength and ductility and resistance to corrosion by salt water, salt air, or gases, but usage is not limited to such applications.

1.3 Classification

Tubing is classified by types as follows (see 8.5):

Type 1 - 100 psi (689 kPa) nominal working pressure

Type 2 - 200 psi (1379 kPa) nominal working pressure

Type 3 - 300 psi (2068 kPa) nominal working pressure

Type 4 - 450 psi (3103 kPa) nominal working pressure

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2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2223 Tolerances, Copper and Copper Alloy Seamless Tubing

AS7766 Terms Used in Aerospace Metals Specifications

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B154 Mercurous Nitrate Test for Copper and Copper Alloys

ASTM B251/B251M General Requirements for Wrought Seamless Copper and Copper-Alloy Tube

ASTM B601 Temper Designations for Copper and Copper Alloys - Wrought and Cast

ASTM B858 Ammonia Vapor Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys

ASTM E8/E8M Tension Testing of Metallic Materials

ASTM E478 Chemical Analysis of Copper Alloys

2.3 Definitions

Terms used in AMS are defined in AS7766.

2.3.1 Copper temper designations are defined in ASTM B601.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM E478 or by other analytical methods acceptable to the purchaser (see 8.5).

Table 1 - Composition

Element (see 3.1.1)	Min	Max
Copper	65.0	68.0
Lead (see 3.1.2)	0.25	0.7
Iron	--	0.07
Zinc (see 3.1.3)	remainder	--
Sum of Named Elements (see 3.1.4)	99.6	

- 3.1.1 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer or supplier and purchaser.
- 3.1.2 For tubing over 5 inches (127 mm) in OD, the lead content shall be 0.7% maximum, with no minimum specified.
- 3.1.3 Zinc may be reported as “remainder,” or as the difference between the sum of results for all elements and 100%, or as the result of direct analysis.
- 3.1.4 When all named elements in Table 1 are analyzed, the sum shall be 99.6% minimum, but such determination is not required for routine acceptance of each lot.

3.2 Condition

Fully recrystallized in light annealed (O50) temper (see 2.3.1). Tubing shall be acid cleaned after final annealing procedure.

3.3 Fabrication

Tubing shall be produced by a seamless process. The external and internal surface finishes shall be produced by any method that will result in surfaces free from laps, folds, tears, and extraneous materials and that show no oxide discoloration. Processing shall not affect limits of wall thickness or corrosion resistance.

3.4 Properties

Tubing shall conform to the following requirements:

3.4.1 Tensile Properties

Shall be as shown in Table 2, determined in accordance with ASTM E8/E8M on specimens as in 4.4.1.

Table 2 - Minimum tensile properties

Property	Value
Tensile Strength	35.0 ksi (241 MPa)
Elongation in 8 Inches (203 mm)	30%

3.4.2 Flattening

Tubing shall withstand flattening and develop no flaws, determined in accordance with 4.4.2.

3.4.3 Bending

Tubing shall show no signs of fracture on the outer surface, determined in accordance with 4.4.3.