



AEROSPACE MATERIAL SPECIFICATION

AMS6365™**REV. M**

Issued 1942-06
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Revised 2026-03

Superseding AMS6365L

(R) Steel Tubing, Seamless,
0.95Cr - 0.20Mo (0.33 - 0.38C) (4135),
Aircraft-Quality,
Normalized and Tempered or Stress Relieved
(Composition similar to UNS G41350)

RATIONALE

AMS6365M is the result of a Five-Year Review and update of the specification. The revision updates the Title to identify quality and condition, adds composition reporting requirements (see 3.1.2), provides alternate grain size requirements (see 3.1.1, 3.4.2, 4.4.1, and 8.3), adds a heat-treatment option (see 3.2 and 8.6), adds strain rate requirements for tensile testing (see 3.4.1.1), updates decarburization measurement methods (see 3.4.3.4), clarifies testing requirements (see 4.2), addresses changes to AMS2301 (see 4.2.1 and 4.4.3), and updates the exception requirements (see 8.5).

1. SCOPE

1.1 Form

This specification covers an aircraft-quality, low-alloy steel in the form of seamless tubing.

1.2 Application

This tubing has been used typically for thin wall-thickness sections where a minimum tensile strength of 95 to 100 ksi (655 to 689 MPa) or up to 160 ksi (1103 MPa) after heat treatment is required and where parts may be welded during fabrication, but usage is not limited to such applications.

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.

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2.1 SAE Publications

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

AMS2253	Tolerances, Carbon and Alloy Steel Tubing
AMS2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS2301	Steel Cleanliness, Aircraft Quality, Magnetic Particle Inspection Procedure
AMS2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock
AMS2807	Identification, Carbon and Low-Alloy Steels, Corrosion- and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft 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 A370	Mechanical Testing of Steel Products
ASTM A751	Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
ASTM E112	Determining Average Grain Size
ASTM E1077	Standard Test Methods for Estimating the Depth of Decarburization of Steel Specimens
ASTM E1444/E1444M	Magnetic Particle Testing for Aerospace

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.33	0.38
Manganese	0.70	0.90
Silicon	0.15	0.35
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	0.80	1.10
Molybdenum	0.15	0.25
Nickel	--	0.25
Copper	--	0.35

- 3.1.1 Aluminum, vanadium, and columbium (niobium) are optional grain refining elements and need not be determined or reported unless used to satisfy the average grain size requirements of 3.4.2.2.
- 3.1.2 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.
- 3.1.3 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.2 Condition

Tubing shall be cold finished and normalized and tempered. Alternately, tubing shall be cold finished and stress relieved. The purchaser shall specify if other conditions are desired (see 8.6).

3.3 Fabrication

Tubing shall be produced by a seamless process. Any surface finishing operation applied to remove objectionable pits and surface blemishes shall be performed prior to final heat treatment. A light polish to improve surface appearance may be employed after final heat treatment.

3.4 Properties

Tubing shall conform to the following requirements; hardness and tensile testing shall be performed in accordance with ASTM A370:

3.4.1 Tensile Properties

Tensile properties shall be as shown in Table 2.

Table 2A - Minimum mechanical properties, inch/pound units

Nominal OD Inches	Nominal Wall Thickness Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D % Full Tube	Elongation in 2 Inches % Strip
Up to 0.500, excl	Up to 0.188, incl	100	85	8	--
Up to 0.500, excl	Over 0.188	95	80	10	--
0.500 and over	Up to 0.188, incl	100	85	12	7
0.500 and over	Over 0.188	95	80	15	10

Table 2B - Minimum mechanical properties, SI units

Nominal OD Millimeters	Nominal Wall Thickness Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50 mm or 4D % Full Tube	Elongation in 50 mm % Strip
Up to 12.70, excl	Up to 4.78, incl	689	586	8	--
Up to 12.70, excl	Over 4.78	655	552	10	--
12.70 and over	Up to 4.78, incl	689	586	12	7
12.70 and over	Over 4.78	655	552	15	10

- 3.4.1.1 Unless otherwise specified, the strain rate shall be set at 0.005 in/in/min (0.005 mm/mm/min) and maintained within a tolerance of ± 0.002 in/in/min (± 0.002 mm/mm/min) through 0.2% offset yield strain. The requirement for compliance becomes effective for material produced 1 year after the publication date of this specification.