



AEROSPACE MATERIAL SPECIFICATION

AMS6437™**REV. L**Issued 1959-11
Revised 2025-05

Superseding AMS6437K

Steel, Sheet, Strip, and Plate
5.0Cr - 1.3Mo - 0.50V (0.38 - 0.43C) (H-11)
Aircraft Quality
(Composition similar to UNS T20811)

RATIONALE

AMS6437L is the result of a Five-Year Review and update of the specification. The revision updates the Title to include material quality, adds composition reporting information (see 3.1.1), revises decarburization testing requirements (see 3.3.1), updates bend test requirements (see 3.3.2), revises heat-treatment time and pyrometry requirements consistent with similar specifications (see 3.3.3), removes hardness testing (see 3.3.3.2), and updates the document based on changes in AMS2301 (see 4.2, 4.4.1, and 4.4.3).

1. SCOPE

1.1 Form

This specification covers an aircraft-quality, low-alloy steel in the form of sheet, strip, and plate.

1.2 Application

These products have been used typically for parts requiring relatively high levels of strength, fatigue resistance, toughness, ductility, and thermal stability for service up to 1000 °F (538 °C), 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.

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.

AMS2252 Tolerances, Low-Alloy Steel Sheet, Strip, and Plate

AMS2259 Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels

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<https://www.sae.org/standards/content/AMS6437L/>

Documents

Standard, visit Sharing Hub

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
AMS2750	Pyrometry
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	Chemical Analysis of Steel Products
ASTM E112	Determining Average Grain Size
ASTM E140	Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
ASTM E290	Bend Testing of Material for Ductility
ASTM E1077	Estimating the Depth of Decarburization of Steel Specimens

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	0.38	0.43
Manganese	0.20	0.40
Silicon	0.80	1.00
Phosphorus	--	0.020
Sulfur	--	0.020
Chromium	4.75	5.25
Molybdenum	1.20	1.40
Vanadium	0.40	0.60
Nickel	--	0.25
Copper	--	0.35

- 3.1.1 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.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.2 Condition

The product shall be supplied in the following condition; tensile tests and hardness tests shall be conducted in accordance with ASTM A370:

3.2.1 Sheet and Strip

Sheet and strip shall be cold finished and bright annealed, or hot rolled, annealed if necessary, and descaled as necessary, having tensile strength not higher than 125 ksi (862 MPa) or equivalent hardness (see 8.2).

3.2.2 Plate

Plate shall be hot rolled, annealed if necessary, and descaled, having tensile strength not higher than 125 ksi (862 MPa) or equivalent hardness (see 8.2).

3.3 Properties

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

3.3.1 Decarburization

Decarburization shall be evaluated by one of the methods of 3.3.1.1 or 3.3.1.2.

3.3.1.1 Metallographic (Microscopic) Method

A cross section taken perpendicular to the surface shall be prepared in accordance with ASTM E1077 and examined metallographically at a magnification not to exceed 200X. The sample shall not show a layer of complete (ferrite) or partial decarburization exceeding the limits of Table 2.

3.3.1.2 Hardness Traverse (Microindentation) Method

The total depth of decarburization shall be determined by a traverse method using microindentation hardness testing in accordance with ASTM E1077. Samples shall be hardened and protected during heat treatment to prevent changes in surface carbon content. Samples may be tempered at the option of the producer. Tempering is generally not recommended, but if tempered, the tempering temperature shall be not higher than 300 °F (149 °C). Measurements shall be far enough away from any adjacent surface to be uninfluenced by any decarburization on the adjacent surface. Acceptance shall be as listed in Table 2.