



AEROSPACE MATERIAL SPECIFICATION	AMS6351™	REV. M
	Issued 1953-12 Reaffirm 1994-04 Revised 2024-12 Superseding AMS6351L	
Steel, Sheet, Strip, and Plate 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130) Aircraft Quality, Spheroidized (Composition similar to UNS G41300)		

RATIONALE

AMS6351M is the result of a Five-Year Review and update of the specification. The revision adds material quality to the Title, updates composition reporting (see 3.1.2), adds pyrometry (see 3.3.1), revises decarburization test methods (see 3.3.3), clarifies bend testing (see 3.3.4), updates testing and reporting requirements consistent with AMS2301 (see 4.2.1, 4.4.1, and 4.4.3), removes details on acceptance tests for ingot cast and continuous cast product - deferring to AMS2301 for this detail (see 4.2), and updates the prohibition of exceptions requirements (see 4.4.2).

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 general use where deep drawing and forming are required, but usage is not limited to such applications. Product may be through-hardened to a minimum tensile strength of 180 ksi (1241 MPa) in sections 0.125 inch (3.18 mm) and under in nominal thickness and lower strength in heavier section thicknesses.

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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Documents

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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
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	0.28	0.33
Manganese	0.40	0.60
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 3.3.2.2.

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

The product shall be supplied in the following condition; hardness shall be not higher than 85 HRB, or equivalent (see 8.2), determined in accordance with ASTM A370:

3.2.1 Sheet and Strip

Sheet and strip shall be cold rolled or hot rolled, annealed to develop a uniform microstructure of spheroidized cementite in ferrite matrix, and descaled.

3.2.2 Plate

Plate shall be hot rolled, annealed to develop a uniform microstructure of spheroidized cementite in ferrite matrix, and descaled.

3.2.2.1 If allowed by the purchaser, cold rolled, annealed to develop a uniform microstructure of spheroidized cementite in ferrite matrix, and descaled.

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 Response to Heat Treatment

Product 0.249 inch (6.32 mm) and under in nominal thickness and thicker product reduced to 0.249 inch $\pm$ 0.010 inch (6.32 mm $\pm$ 0.25 mm) in thickness shall have tensile strength not lower than 125 ksi (862 MPa) or hardness not lower than 26 HRC, or equivalent (see 8.2), after being hardened by quenching in oil from 1600 °F $\pm$ 10 °F (871 °C $\pm$ 6 °C) and tempered for not less than 30 minutes at not lower than 900 °F (482 °C). Pyrometry shall be in accordance with AMS2750.

3.3.2 Average Grain Size

Average grain size shall be determined by either 3.3.2.1 or 3.3.2.2.