



AEROSPACE MATERIAL SPECIFICATION

AMS-S-6758™**REV. B**

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Stabilized	2017-11

Superseding AMS-S-6758A

Steel, Chrome-Molybdenum (4130) Bars and
Reforging Stock (Aircraft Quality)

RATIONALE

AMS-S-6758B has been declared Stabilized as it has been replaced by technically equivalent specifications.

STABILIZED NOTICE

AMS-S-6758B has been declared "STABILIZED" by SAE AMS Committee E Carbon and Low Alloy Steels. This document will no longer be updated and may no longer represent standard industry practice. This document was stabilized because previously this document was Reaffirmed Non-Current. The last technical update of this document occurred in August 1998. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

AMS Committee E recommends that the following technically equivalent specifications may be considered for future procurement. This listing does not constitute authority to substitute these specifications for the "STABILIZED" specification.

AMS6346 Steel Bars 0.95Cr - 0.20Mo (0.28 to 0.33C) (SAE 4130) Hardened and Tempered, 125 Ksi (862 MPa) Tensile Strength

AMS6348 Steel, Bars 0.95Cr - 0.20Mo (0.28 to 0.33C) (SAE 4130) Normalized

AMS6370 Steel, Bars, Forgings, and Rings 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130)

AMS6528 Steel, Bars, Forgings, and Rings 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130)

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NOTICE

This document has been taken directly from U.S. Military Specification MIL-S-6758B and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-S-6758B. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this technical report.

1. SCOPE:

1.1 Scope:

This specification covers chrome-molybdenum (4130) steel bars and forging stock of aircraft quality.

1.2 Classification:

The steel bars and reforging stock shall be as follows:

1.2.1 Physical condition: Materials shall be furnished in one of the following physical conditions, as specified (see 6.2c):

- a. As forged
- b. As rolled
- c. Annealed
- d. Normalized
- e. Normalized and tempered
- f. Hardened and tempered

1.2.2 Surface conditions: Materials shall be furnished in one of the following surface conditions, as specified (see 6.2c):

1. Black, as forged or rolled
2. Pickled or blast cleaned
3. Rough turned
4. Cold finished (drawn)
5. Turned, ground and polished

2. APPLICABLE DOCUMENTS:

The following publications, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

2.1 U.S. Government Publications:

Available from DODSSP Subscription Services Desk, Building 4D, 700 Robbins Avenue,
Philadelphia, PA 19111-5094.

MIL-STD-129 Marking for Shipment and Storage

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

FED-STD-183 Continuous Identification Marking of Iron and Steel Products

2.2 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2251	Tolerances, Low-Alloy Steel Bars
AMS 2301	Aircraft Quality Steel Cleanliness, Magnetic Particle Inspection Procedure
AMS 2370	Quality Assurance Sampling and Testing Carbon and Low-Alloy Steel Wrought Products and Forging Stock

2.3 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 255	End-Quench Test for Hardenability of Steel
ASTM A 700	Packaging, Marking and Loading Methods for Steel Products for Domestic Shipment
ASTM E 8	Test Methods of Tension Testing of Metallic Materials
ASTM E 10	Test Method for Brinell Hardness of Metallic Materials
ASTM E 18	Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E 112	Determining Average Grain Size
ASTM E 350	Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron
ASTM E 381	Macrotech Testing, Inspection, and Rating Steel Products Comprising Bars, Billets, Blooms, and Forgings
ASTM E 1077	Estimating the Depth of Decarburization of Steel Specimens

3. REQUIREMENTS:

3.1 Material:

3.1.1 Quality: The steel shall be of aircraft quality.

3.1.1.1 Cleanliness: When inspected magnetically in accordance with the procedures of AMS 2301, material shall not exceed the size and frequency rating limits specified in AMS 2301 (see 4.5).

3.1.2 Manufacturing process: The steel may be melted by one of the commercially acceptable types of melting including open hearth, basic oxygen or electric arc furnace. The steel may be ingot cast or continuous cast into billets. When ingot casting, sufficient discard shall be made to secure freedom from piping and undue segregation.

3.1.3 Physical/surface condition: Unless otherwise specified in the acquisition documents, (see 6.2c), bars 1.500 inches or less in diameter or thickness shall be furnished in conditions (C) (4), and bars over 1.500 inches in diameter or thickness shall be furnished in conditions (C) (2).

3.2 Chemical composition:

The chemical composition shall be within the limits specified in table I when tested in accordance with 4.6. The heat analysis shall conform to the column entitled "Analysis", and the semi-finished or finished product shall conform to the column entitled "Check analysis tolerance".

3.3 Hardenability:

The hardenability for all specified physical conditions shall be J5 = 34 HRC min, and J8 = 27 HRC min when tested in accordance with 4.7.

3.4 Grain size:

The austenitic grain size shall be predominately No. 5 or finer, with grains as large as No. 3 permissible when tested in accordance with 4.8.

3.5 Macrostructure:

Visual examination of transverse sections of stock in sizes up to and including 36 square inches shall be equal to or better than S-2, R-1, and C-2 of ASTM E 381; sizes over 36 square inches, up to and including 100 square inches, shall be equal to or better than S-2, R-2, and C-3 of ASTM E 381. In addition, the transverse sections shall show no pipe or cracks, and any porosity, segregations, inclusions, and other imperfections shall be no worse than the preceeding macrographs of ASTM E 381. Macroscopic examination of finished bars is required only if manufacturers inspection of the macrostructure at an earlier stage of processing such as forged bars, blooms or billets has not been accomplished (see 4.9).

3.6 Decarburization:

Unless otherwise specified (see 6.2f), when tested in accordance with 4.10, the depth of any decarburization shall be as follows:

- a. Materials furnished in surface conditions (2) and (4) shall not have decarburization greater than the limits in table II.
- b. Bars furnished in surface conditions (3) and (5) shall be free from decarburization.
- c. When bars are ordered for reforging purposes, or surface condition (1), any decarburization limits are waived.
- d. When determining the depth of decarburization, it is permissible to disregard local areas, provided the decarburization of such areas does not exceed the limits of table II by more than 0.005 inch and the width is 0.065 inch or less.