



AEROSPACE MATERIAL SPECIFICATION

AMS6498™**REV. C**Issued 2009-09
Revised 2026-04

Superseding AMS6498B

(R) Steel Bars, Forgings, and Tubing, Nitriding,
1.4Cr - 1.2Mo - 0.3V (0.29 - 0.36C), (32CrMoNiV5),
Double Vacuum Melted,
Premium Aircraft-Quality for Bearing Applications
(Composition similar to UNS K23280)

RATIONALE

AMS6498C is the result of a Five-Year Review and update of the specification. The revision adds the common name to the Title, adds stress corrosion note (see 1.2.1), addresses composition reporting (see 3.1.1), clarifies testing and condition (see 3.3), updates macrostructure testing requirements (see 3.4.1 and 8.7), adds pyrometry control (see 3.4.4.1), updates strain rate requirements during tensile tests (see 3.4.4.1.1), specifies Charpy V-Notch testing requirements (see Table 4), revises decarburization test methods (see 3.4.5.5), adds forging stock testing option (see 4.4.3), revises stock removal note (see 8.4), and updates exceptions requirements (see 4.4.4 and 8.6).

1. SCOPE

1.1 Form

This specification covers a nitriding grade of premium aircraft-quality, low-alloy steel in the form of bars, forgings, mechanical tubing, and forging stock. AMS6496 and AMS6497 cover UNS K23280 with other quality levels.

1.2 Application

These products have been used typically for nitrided parts requiring high minimum core hardness with a narrow range, reduced distortion, and subject to stringent magnetic particle inspection standards, but usage is not limited to such applications.

1.2.1 Certain design and processing procedures may cause these products to become susceptible to stress-corrosion cracking after heat treatment; ARP1110 recommends practices to minimize such conditions.

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.

AMS2251	Tolerances, Low-Alloy Steel Bars
AMS2253	Tolerances, Carbon and Alloy Steel Tubing
AMS2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS2300	Steel Cleanliness, Premium Aircraft-Quality, Magnetic Particle Inspection Procedure
AMS2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock
AMS2372	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Forgings
AMS2750	Pyrometry
AMS2806	Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels, and Corrosion and Heat-Resistant Steels and Alloys
AMS2808	Identification, Forgings
AMS6496	Steel Bars, Forgings, Mechanical Tubing and Forging Stock, Nitriding, 1.4Cr - 1.2Mo - 0.3V (0.29 - 0.36C) (32CrMoNiV5), Aircraft-Quality for Bearing Applications
AMS6497	Steel Bars, Forgings, and Tubing, Nitriding, 1.4Cr - 1.2Mo - 0.3V (0.29 - 0.36C), Electroslag Remelted or Consumable Electrode Vacuum Remelted, Premium Aircraft-Quality for Bearing Applications
ARP1110	Minimizing Stress Corrosion Cracking in Wrought Forms of Steels and Corrosion Resistant Steels and Alloys
AS1182	Standard Stock Removal Allowance, Aircraft-Quality and Premium Aircraft-Quality Steel, Bars and Mechanical 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 A604	Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets
ASTM A751	Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
ASTM E45	Determining the Inclusion Content of Steels
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 E1077	Standard Test Methods for 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 following percentages by weight shown in Table 1, determined by in accordance with ASTM A751 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.29	0.36
Manganese	0.70	1.20
Silicon	--	0.30
Phosphorus	--	0.015
Sulfur	--	0.005
Chromium	1.10	1.60
Nickel	0.50	1.00
Molybdenum	0.90	1.40
Aluminum	0.10	0.30
Vanadium	0.20	0.40

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 Melting Practice

Steel shall be double vacuum melted, using vacuum induction melting (VIM) followed by vacuum arc consumable electrode remelting (VAR).

3.3 Condition

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

3.3.1 Bars

3.3.1.1 Bars 0.500 inch (12.70 mm) and under in nominal diameter or least distance between parallel sides shall be cold finished having tensile strength not higher than 138 ksi (950 MPa) or hardness not higher than 285 HBW, or equivalent (see 8.2).

3.3.1.2 Bars over 0.500 inch (12.70 mm) in nominal diameter or least distance between parallel sides shall be hot finished and annealed, unless otherwise ordered, having hardness not higher than 285 HBW, or equivalent (see 8.2). Bars ordered cold finished may have hardness as high as 310 HBW, or equivalent (see 8.2).

3.3.1.3 Bars shall not be cut from plate.

3.3.2 Forgings

Forgings shall be supplied as ordered.