

**AEROSPACE
MATERIAL
SPECIFICATION**



MAM 6415C

Issued JAN 1989
Revised MAR 1998
Cancelled MAR 2003

Superseding MAM 6415B

Steel, Bars, Forgings, and Tubing
0.80Cr - 1.8Ni - 0.25Mo (0.38 - 0.43C) (SAE 4340)

G43406

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of March, 2003. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications.

AMS 6415 covers the same material.

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1. SCOPE:

1.1 Form:

This specification covers an aircraft-quality, low-alloy steel in the form of bars, forgings, mechanical tubing, and forging stock procured in SI (Metric) units.

1.1.1 AMS 6415 is the inch/pound version of this MAM.

1.2 Application:

These products have been used typically for parts, 90 millimeters and under in nominal thickness at time of heat treatment, requiring a through-hardening steel capable of developing a minimum hardness of 40 HRC when properly hardened and tempered and also for parts of greater thickness but requiring proportionately lower hardness, 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 following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

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

MAM 2251 Tolerances, Metric, Low-Alloy Steel Bars

MAM 2253 Tolerances, Metric, Carbon and Alloy Steel Tubing

AMS 2259 Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels

MAM 2301 Cleanliness, Aircraft-Quality Steel, Magnetic Particle Inspection Procedure, Metric (SI) Measurement

AMS 2370 Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

AMS 2372 Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Forgings

AMS 2806 Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat Resistant Steels and Alloys

AMS 2808 Identification, Forgings

AS1182 Standard Machining Allowance, Aircraft-Quality and Premium Aircraft-Quality Steel Bars and Mechanical Tubing

ARP1110 Minimizing Stress Corrosion Cracking in Wrought Forms of Steels and Corrosion Resistant Steels and Alloys

2.2 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 370 Mechanical Testing of Steel Products

ASTM E 112 Determining the Average Grain Size

ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

ASTM E 381 Macroetch Testing Steel, Bars, Billets, Blooms, and Forgings

2.3 U.S. Government Publications:

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

MIL-H-6875 Heat Treatment of Steel, Process for

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	0.38	0.43
Manganese	0.65	0.85
Silicon	0.15	0.35
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	0.70	0.90
Nickel	1.65	2.00
Molybdenum	0.20	0.30
Copper	--	0.35

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition:

The product shall be supplied in the following condition; hardness and tensile strength shall be determined in accordance with ASTM A 370.