

AEROSPACE MATERIAL SPECIFICATION



MAM 5706C

Issued OCT 1987
Revised JUL 1989
Reaffirmed JUL 1998
Cancelled MAR 2003
Superseding MAM 5706B

Alloy Bars, Forgings, and Rings, Corrosion and Heat Resistant
57Ni - 19.5Cr - 13.5Co - 4.3Mo - 3.0Ti - 1.4Al - 0.006B - 0.05Zr
Consumable Electrode or Vacuum Induction Melted
995° - 1040 °C Solution Heat Treated

N07001

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 5706 covers the same material.

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1. SCOPE:

1.1 Form:

This specification covers a corrosion and heat resistant nickel alloy in the form of bars, forgings, flash welded rings, and stock for forging, flash welded rings, or heading procured in SI (metric) units. AMS 5706, specified in inch/pound units, is the equivalent of this MAM.

1.2 Application:

Primarily for parts, such as fasteners, flanges, and rings, requiring high strength up to 815°C and oxidation resistance up to 955°C, particularly those parts which are formed or welded and then heat treated to develop required properties.

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.

2.1.1 Aerospace Material Specifications:

MAM 2261	Tolerances, Metric, Nickel, Nickel Alloy, and Cobalt Alloy Bars and Forgings Stock
AMS 2269	Chemical Check Analysis Limits, Wrought Nickel Alloys and Cobalt Alloys
AMS 2350	Standards and Test Methods
AMS 2371	Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products Except Forgings and Forging Stock
AMS 2374	Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Forgings and Forging Stock
AMS 2375	Control of Forgings Requiring First Article Approval
AMS 2750	Pyrometry
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
AMS 7490	Rings, Flash Welded, Corrosion and Heat Resistant Austenitic Steels, and Austenitic-Type Alloys

2.2 ASTM Publications:

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

ASTM E 8M	Tension Testing of Metallic Materials (Metric)
ASTM E 10	Brinell Hardness of Metallic Materials

2.2 (Continued):

- ASTM E 112 Determining Average Grain Size
- ASTM E 139 Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
- ASTM E 292 Conducting Time-of-Rupture Notch Tension Tests of Materials
- ASTM E 354 Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

2.3 U.S. Government Publications:

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

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E354, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Carbon	0.02	0.10
Manganese	--	0.10
Silicon	--	0.15
Phosphorus	--	0.015
Sulfur	--	0.015
Chromium	18.00	21.00
Cobalt	12.00	15.00
Molybdenum	3.50	5.00
Titanium	2.75	3.25
Aluminum	1.20	1.60
Boron	0.003	0.010
Zirconium	0.02	0.08
Iron	--	2.00
Copper	--	0.10
Lead	--	0.0005 (5 ppm)
Bismuth	--	0.0003 (0.3 ppm)
Selenium	--	0.0003 (5 ppm)
Nickel	remainder	