AEROSPACE MATERIAL SPECIFICATION

AMS5669	REV. B

Issued 1965-09
Noncurrent 1985-07
Reaf. Nonc. 2001-09
Stabilized 2014-05

Superseding AMS5669A

Alloy Bars, Corrosion and Heat Resistant
Nickel Base - 15.5Cr - 0.95 (Cb + Ta) - 2.5Ti - 0.70Al - 7.0Fe
Consumable Electrode or Vacuum Induction Melted

RATIONALE

AMS5669B stabilizes this document because it represents mature technology which is not expected to change.

STABILIZED NOTICE

AMS5669B has been declared "STABILIZED" by AMS Committee F. This document will no longer be updated and may no longer represent standard industry practice. This document was stabilized because it contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was non-current. This document has never been technically updated. 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.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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1. ACKNOWLEDGMENT:

   A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION:

   Primarily for machined parts requiring high strength at temperatures in the range of 800 - 1100 F (427 - 593 C), particularly where welding is involved.

3. COMPOSITION:

	min	max
Carbon	--	0.08
Manganese	--	0.35
Silicon	--	0.35
Phosphorus (1)	--	0.015
Sulfur	--	0.010
Chromium	14.00	17.00
Nickel + Cobalt	70.00	--
Cobalt (1)	--	1.00
Columbium + Tantalum	0.70	1.20
Titanium	2.25	2.75
Aluminum	0.40	1.00
Iron	5.00	9.00
Copper	--	0.50

(1) Determination not required for routine acceptance.

3.1 Check Analysis:

Composition variations shall meet the requirements of the latest issue of AMS 2269.

4. CONDITION:

Unless otherwise specified, bars shall be supplied in the following condition:

4.1 Bars 4 In. and Under in Diameter or Distance Between Parallel Sides:

As hot finished: round bars shall be ground or turned except that bars under 0.5 in. in diameter, when so ordered, shall be cold drawn.

4.2 Bars Over 4 In. in Diameter or Distance Between Parallel Sides:

As forged or as hot rolled.

5. TECHNICAL REQUIREMENTS:

5.1 Properties After Heat Treatment:

The product shall conform to the following requirements after being solution heat treated by heating to 1800 F ± 25 (982.2 C ± 14), holding at heat for 1 hr, and cooling at a rate equivalent to air cool or faster and then precipitation heat treated by heating to 1350 F ± 15 (732.2 C ± 8.3), holding at heat for 8 hr, cooling at a rate of 100 F ± 15 (55.6 C ± 8.3) per hr to 1150 F ± 15 (621.1 C ± 8.3), holding at 1150 F ± 15 (621.1 C ± 8.3) for 8 hr, and air cooling.

Note. Instead of the 100 F (55.6 C) per hr cooling rate to 1150 F ± 15 (621.1 C ± 8.3), material may be furnace cooled at any rate provided the time at 1150 F ± 15 (621.1C ± 8.3) is adjusted to give a total precipitation heat treatment time of 18 hours.

Nominal Diameter or Distance Between Parallel Sides Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 31,000,000)		Elongation % in 2 in. or 4D, min	Reduction of Area %, min
		psi, min	Extension Under Load in. in 2 in.		
Up to 2.50, excl	170,000	115,000	0.0114	18	25
2.50 to 4.00, excl	170,000	115,000	0.0114	15	20
4.00 and over	As agreed upon by purchaser and vendor.				

5.2 Hardness:

Rockwell C 32 - 42 or equivalent.

6. QUALITY:

Material shall be produced by multiple melting using consumable electrode practice in the remelt cycle or shall be induction melted under vacuum, unless otherwise permitted. If consumable electrode remelting is not performed in vacuum, electrodes which have been produced by vacuum induction melting shall be used. The product shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.