

AEROSPACE MATERIAL SPECIFICATION



AMS 5851C

Issued SEP 1977
Revised APR 1994

Superseding AMS 5851B

Submitted for recognition as an American National Standard

NICKEL ALLOY, CORROSION AND HEAT RESISTANT, POWDER
55Ni - 15Cr - 17Co - 5.0Mo - 3.5Ti - 4.0Al - 0.025B
As Fabricated

UNS N13017

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of April, 1994. It is recommended, therefore, that this specification not be specified for new designs.

This cover sheet should be attached to the "B" revision of the subject specification.

"NONCURRENT" refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs. Each of these "NONCURRENT" specifications is available from SAE upon request.

PREPARED UNDER THE JURISDICTION OF AMS COMMITTEE "F"

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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 5851B

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ALLOY POWDER, CORROSION AND HEAT RESISTANT
55Ni - 15Cr - 17Co - 5.0Mo - 3.5Ti - 4.0Al - 0.025B
As Fabricated

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1. SCOPE:

- 1.1 Form: This specification covers a corrosion and heat resistant nickel alloy in the form of prealloyed powder.
- 1.2 Application: Primarily for compaction into net or near net shapes and into forging stock in the form of billets or preforms for use up to 1400°F (760°C) in highly-stressed parts such as rotating parts of gas turbine engines.

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 documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2269 - Chemical Check Analysis Limits, Wrought Nickel Alloys and Cobalt Alloys
AMS 2350 - Standards and Test Methods
AMS 2635 - Radiographic Inspection

2.1.2 Aerospace Recommended Practices:

ARP1313 - Determination of Trace Elements in High Temperature Alloys

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2.2 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.

ASTM B214 - Sieve Analysis of Granular Metal Powders

ASTM B215 - Sampling Finished Lots of Metal Powders

ASTM B311 - Density of Cemented Carbides

ASTM B527 - Tap Density of Powders of Refractory Metals and Compounds by Tap-Pak Volumeter

ASTM E354 - Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

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 except that lead and bismuth shall be determined in accordance with ARP1313 and oxygen and nitrogen shall be determined by Leco gas analyzer or equivalent:

	min	max
Carbon	0.02	- 0.06
Manganese	--	0.15
Silicon	--	0.20
Phosphorus	--	0.015
Sulfur	--	0.015
Chromium	14.00	- 16.00
Cobalt	16.00	- 18.00
Molybdenum	4.50	- 5.50
Titanium	3.35	- 3.65
Aluminum	3.85	- 4.15
Boron	0.020	- 0.030
Tungsten	--	0.05
Iron	--	0.50
Copper	--	0.10
Zirconium	--	0.06
Lead	--	0.0002 (2 ppm)
Bismuth	--	0.00003 (0.3 ppm)
Oxygen	--	0.010 (100 ppm)
Nitrogen	--	0.0050 (50 ppm)
Nickel	remainder	