

AEROSPACE MATERIAL SPECIFICATION

SAE

AMS 5851D

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Superseding	AMS 5851C

Nickel Alloy, Corrosion and Heat Resistant, Powder
55Ni - 15Cr - 17Co - 5.0Mo - 3.5Ti - 4.0Al - 0.025B
As Fabricated

(Composition similar to UNS N13017)

CANCELLATION NOTICE

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Documents

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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	

3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2269; no variation over maximum will be permitted for lead, bismuth, oxygen, and nitrogen.