



AEROSPACE MATERIAL SPECIFICATION

AMS5384™**REV. F**

Issued	1960-06
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Noncurrent	2001-10
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Stabilized	2017-04

Superseding AMS5384E

Alloy Castings, Investment, Corrosion and Heat Resistant
53Ni - 18Cr - 18Co - 4.0Mo - 2.9Ti - 2.9Al - 0.006B
Vacuum-Melted, Vacuum-Cast, Solution and Precipitation Heat Treated
UNS N07500

RATIONALE

AMS5384F stabilizes this document because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

STABILIZED NOTICE

AMS5384F has been declared "STABILIZED" by the SAE AMS F Corrosion Heat Resistant Alloys Committee. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was non-current. The last technical update of this document occurred in October, 1986. 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.

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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 investment castings.

1.2 Application:

Primarily for small parts, such as turbine blades and vanes, requiring high strength and oxidation resistance up to 1600°F (870°C).

1.3 Classification:

Castings conforming to this specification are classified as follows:

Class 1 - Trace element limits conforming to AMS 2280-1.

Class 2 - Trace element limits conforming to AMS 2280-2.

1.3.1 Castings shall conform to Class 1 unless Class 2 is specified by purchaser (See 8.3).

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications 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.

AMS 2268	Chemical Check Analysis Limits, Cast Nickel and Nickel Alloys
AMS 2280	Trace Element Control, Nickel Alloy Castings
AMS 2350	Standards and Test Methods
AMS 2361	Elevated Temperature Tensile Properties of Castings
AMS 2362	Stress-Rupture Properties of Castings
AMS 2635	Radiographic Inspection
AMS 2645	Fluorescent Penetrant Inspection
AMS 2694	Repair Welding of Aerospace Castings
AMS 2804	Identification, Castings

2.2 ASTM Publications:

Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E8 Tension Testing of Metallic Materials
ASTM E18 Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E21 Elevated Temperature Tension Tests of Metallic Materials
ASTM E139 Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
ASTM E192 Reference Radiographs of Investment Steel Castings for Aerospace Applications
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.

2.3.2 Military Specifications:

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

2.3.3 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Castings shall conform to the percentages by weight, determined by wet chemical methods in accordance with ASTM E354 or by spectrographic or other analytical methods approved by purchaser:

	min	max
Carbon	--	0.10
Manganese	--	0.20
Silicon	--	0.30
Phosphorus	--	0.015
Sulfur	--	0.015
Chromium	16.00	20.00
Cobalt	16.00	20.00
Molybdenum	3.00	5.00
Titanium	2.50	3.25
Aluminum	2.50	3.25
Boron	0.003	0.010
Iron	--	2.00
Copper	--	0.10
Nickel	remainder	

3.1.1 Trace element limits shall conform to AMS 2280-1 unless Class 2 is specified, in which case limits shall conform to AMS 2280-2.

3.1.2 Check Analysis: Composition variations shall meet the requirements of AMS 2268.

3.2 Condition:

Solution and precipitation heat treated.

3.3 Casting:

3.3.1 The metal for castings shall be melted and poured under vacuum without loss of vacuum between melting and pouring. When permitted by purchaser, protective atmosphere may be used in lieu of vacuum for pouring of castings.

3.3.2 Castings shall be poured either from remelted metal from a master heat or directly from a master heat. In either case, metal for casting shall be qualified as 3.4.

3.3.2.1 A master heat is refined metal of a single furnace charge melted and cast into ingot under vacuum. Gates, sprues, risers, and rejected castings shall be used only in preparation of master heats; they shall not be remelted directly, without refining, for pouring of castings.