



AEROSPACE MATERIAL SPECIFICATION

AMS5914™**REV. C**

Issued 1995-05
Reaffirmed 2012-10
Revised 2024-09

Superseding AMS5914B

(R) Nickel Alloy, Corrosion and Heat Resistant, Sheet, Strip, and Foil
52.5Ni - 19Cr - 3.0Mo - 5.0Cb (Nb) - 0.90Ti - 0.50Al - 18Fe
Consumable Electrode or Vacuum Induction Melted,
Precision Cold Rolled, Solution Heat Treated (Alloy 718 SPF)
(Composition similar to UNS N07719)

RATIONALE

AMS5914C is the result of a Five-Year Review and update of the specification. The revision adds SI units throughout (see 8.5), updates composition testing and reporting (see 3.1 and 3.1.1), revises finish (see 3.3.1), adds continuous heat-treatment and pyrometry controls (see 3.5, 3.5.2, and 3.6.2), adds strain rate during tensile testing (see 3.6.2.1.1.1), addresses typographical errors in Tables 5 and 6, and updates the exceptions requirements (removes 5.1.1 from AMS5914B; see 8.4).

1. SCOPE

1.1 Form

This specification covers a precision cold-rolled corrosion- and heat-resistant nickel alloy in the form of sheet and strip over 0.005 to 0.015 inch (0.13 to 0.38 mm), inclusive, in nominal thickness and foil up to 0.005 inch (0.13 mm), inclusive, in nominal thickness (see 8.4).

1.2 Application

These products have been used typically for the fabrication of bellows, diaphragms, and other components requiring a combination of high strength, resistance to heat and corrosion, leak tightness, and maximum fatigue life, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2262	Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Sheet, Strip, and Plate
AMS2269	Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys
AMS2283	Composition Testing Methods for Nickel- and Cobalt-Based Alloys
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2750	Pyrometry
AS7766	Terms Used in Aerospace Metals Specifications

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E3	Preparation of Metallographic Specimens
ASTM E8/E8M	Tension Testing of Metallic Materials
ASTM E18	Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E21	Elevated Temperature Tension Tests for Metallic Materials
ASTM E112	Determining Average Grain Size
ASTM E139	Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
ASTM E140	Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
ASTM E345	Tension Testing of Metallic Foil
ASTM E384	Microindentation Hardness of Materials
ASTM E407	Microetching Metals and Alloys

2.3 ASME Publications

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), www.asme.org.

ASME B46.1	Surface Texture
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2.4 Terms used in AMS are defined in AS7766 and as follows:

2.4.1 ALLOY-DEPLETED SURFACE LAYER

An alloy-depleted surface layer is a loss of alloying elements at the surface sufficient to effect a near-surface microstructure difference using a suitable etchant.

2.4.2 LOT

A lot shall be all product from the same heat, rolled and solution heat treated as a single batch or an uninterrupted continuous run.

2.4.3 STRINGER

A stringer is a microstructural configuration of alloy constituents or foreign nonmetallic material lined up in the direction of rolling.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2283 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.05
Manganese	--	0.35
Silicon	--	0.35
Phosphorous	--	0.015
Sulfur	--	0.002
Chromium	17.00	21.00
Nickel	50.00	55.00
Molybdenum	2.80	3.30
Columbium	4.75	5.25
Titanium	0.65	1.15
Aluminum	0.20	0.80
Cobalt	--	1.00
Tantalum	--	0.05
Boron	--	0.006
Copper	--	0.30
Lead	--	0.0005 (5 ppm)
Bismuth	--	0.00003 (0.3 ppm)
Selenium	--	0.0003 (3 ppm)
Nitrogen	--	0.01
Iron	remainder	

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2269.

3.2 Melting Practice

Alloy shall be multiple melted using consumable electrode practice in the remelt cycle. If consumable electrode remelting is not performed in vacuum, electrodes that have been produced by vacuum induction melting shall be used for remelting.