



AEROSPACE MATERIAL SPECIFICATION

AMS4731™**REV. E**

Issued 1970-11
Reaffirmed 2012-10
Revised 2025-10

Superseding AMS4731D

Nickel-Copper Alloy Wire and Ribbon, Corrosion-Resistant,
67Ni - 31Cu (Monel® 400),
Annealed
(Composition similar to UNS N04400)

RATIONALE

AMS4731E is the result of a Five-Year Review and update of the specification. The revision updates the Title to include the trade name (see 8.5), updates composition reporting (see 3.1.1), and removes strain rate control requirements (see 3.3.1.1, Rev. D).

1. SCOPE

1.1 Form

This specification covers a corrosion-resistant nickel-copper alloy in the form of wire and ribbon.

1.2 Application

This product is used typically for parts where essentially nonmagnetic properties are required, 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.

2.1 SAE Publications

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

AMS2269	Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AS7766	Terms Used in Aerospace Metals Specifications

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<https://www.sae.org/standards/content/AMS4731E/>

Documents

Standard, visit Sharing Hub

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 E8/E8M Tension Testing of Metallic Materials

ASTM E76 Chemical Analysis of Nickel-Copper Alloys

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the following percentages by weight shown in Table 1, determined in accordance with ASTM E76 or by other analytical methods approved by the purchaser.

Table 1 - Composition

Element	Min	Max
Nickel	63.0	--
Copper	28.0	34.0
Iron	--	2.5
Manganese	--	2.0
Aluminum	--	0.50
Silicon	--	0.50
Carbon	--	0.20
Phosphorus	--	0.02
Zinc	--	0.02
Sulfur	--	0.015
Lead	--	0.006
Tin	--	0.006

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 Condition

Wire shall be cold drawn or cold rolled, annealed, and, unless annealing is performed in an atmosphere yielding a bright finish, descaled.

3.3 Properties

The product shall conform to the following requirements:

3.3.1 Tensile Strength

Tensile strength shall be not higher than 85 ksi (585 MPa), determined in accordance with ASTM E8/E8M.

3.4 Quality

The product shall be uniform in quality, condition, temper, and cross section. Surfaces shall, determined at up to 30X magnification, be free from scale, corrosion, cracks, seams, scratches, slivers, dirt, grease, oil, streaks, stains, pit marks, burns, dents, blisters, laps, grooves, inclusions, and other imperfections detrimental to usage of the product.

3.5 Sizes and Tolerances

The product shall be supplied in the sizes and to the tolerances specified in 3.5.1 and 3.5.2.

3.5.1 Round Wire (Cold Drawn)

Round wire shall be as shown in Table 2.

Table 2A - Diametral tolerances, inch/pound units

Nominal Diameter Inches	Tolerance Inches Plus and Minus
0.0040	0.0002
0.0060	0.0002
0.0080	0.0003
0.0120	0.0003
0.0160	0.0004
0.0200	0.0005
0.0250	0.0005
0.0320	0.0006
0.0400	0.0006

Table 2B - Diametral tolerances, SI units

Nominal Diameter Millimeters	Tolerance Millimeters Plus and Minus
0.100	0.005
0.150	0.005
0.200	0.008
0.300	0.008
0.400	0.010
0.500	0.012
0.625	0.012
0.800	0.015
1.000	0.015