Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 4730D
Superseding AMS 4730C
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UNS NO4400

NICKEL-COPPER ALLOY WIRE, CORROSION RESISTANT
67Ni - 31Cu
Annealed

1. SCOPE:

1.1 Form: This specification covers a corrosion-resistant nickel-copper alloy in the form of wire.

1.2 Application: Primarily for woven wire cloth and screen, and for lockwire.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2269 - Chemical Check Analysis Limits, Wrought Nickel and Nickel Base Alloys
AMS 2350 - Standards and Test Methods
AMS 2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Alloys, Wrought Products Except Forgings

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 E76 - Chemical Analysis of Nickel-Copper Alloys

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

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Standards:

MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

Printed in U.S.A.

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical Ø methods in accordance with ASTM E76, by spectrographic methods in accordance with Federal Test Standard No. 151, Method 112, or by other approved analytical methods:

	min	max
Nickel + Cobalt	63.0	70.0
Iron	--	2.5
Manganese	--	2.0
Cobalt (3.1.1)	--	1.0
Silicon	--	0.5
Carbon	--	0.3
Sulfur	--	0.024
Copper	remainder	

Ø 3.1.1 Determination not required for routine acceptance.

3.1.2 Check Analysis: Composition variations shall meet the requirements of AMS 2269.

3.2 Condition: Cold-drawn, annealed, and descaled if necessary.

3.3 Properties: Wire shall conform to the following requirements:

Ø 3.3.1 Tensile Properties: Shall be as specified in Table I, determined in accordance with ASTM E8.

TABLE I

Nominal Diameter Inch	Tensile Strength psi, max	
	Coils or Spools	Cut Lengths
0.002 to 0.015, incl	105,000	--
Over 0.015 to 0.040, incl	100,000	--
Over 0.040	90,000	90,000

TABLE I (SI)

Nominal Diameter Millimetres	Tensile Strength MPa, max	
	Coils or Spools	Cut Lengths
0.05 to 0.38, incl	724	--
Over 0.38 to 1.02, incl	690	--
Over 1.02	621	621

3.3.2 Bending: Wire shall withstand, without cracking, bending at room temperature through an angle of 180 deg (3.14 rad) around a diameter equal to the nominal diameter of the wire.

3.4 Quality: Wire, as received by the purchaser, shall be uniform in quality and condition, sound, smooth, and Ø free from foreign materials and from internal and external imperfections detrimental to usage of the wire.

3.5 Tolerances: Unless otherwise specified, tolerances shall be as follows:

3.5.1 Diameter:

TABLE II

Nominal Diameter Inch	Tolerance, Inch plus and minus
0.002 to 0.0044, incl	0.0002
Over 0.0044 to 0.0079, incl	0.00025
Over 0.0079 to 0.0149, incl	0.0003
Over 0.0149 to 0.0199, incl	0.0004
Over 0.0199 to 0.031, incl	0.0005
Over 0.031 to 0.045, incl	0.0006
Over 0.045 to 0.079, incl	0.0007
Over 0.079 to 0.1875, incl	0.0010
Over 0.1875 to 0.406, incl	0.0015
Over 0.406	0.002

TABLE II (SI)

Nominal Diameter Millimetres	Tolerance, Millimetres plus and minus
0.05 to 0.112, incl	0.005
Over 0.112 to 0.201, incl	0.0064
Over 0.201 to 0.378, incl	0.008
Over 0.378 to 0.505, incl	0.010
Over 0.505 to 0.79, incl	0.013
Over 0.79 to 1.14, incl	0.015
Over 1.14 to 2.01, incl	0.018
Over 2.01 to 4.762, incl	0.025
Over 4.762 to 10.31, incl	0.038
Over 10.31	0.05

3.5.2 Out-of-Roundness: Round wire shall not be out-of-round by more than one-half the total tolerance given in 3.5.1.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of wire shall supply all samples and shall be responsible ø for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the wire conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specifi- ø cation are classified as acceptance tests.

ø 4.3 Sampling: Shall be in accordance with AMS 2371.

4.4 Reports:

4.4.1 The vendor of wire shall furnish with each shipment three copies of a report showing the results of ø tests for chemical composition of each heat and for tensile and bending properties of each size from each heat. This report shall include the purchase order number, heat number, material specification number and its revision letter, size, and quantity from each heat.