



AEROSPACE MATERIAL SPECIFICATION

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

AMS5555A
Superseding AMS 5555

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Nickel Wire and Ribbon 99Ni

1. SCOPE:

1.1 Form: This specification covers nickel in the form of round wire and rectangular ribbon.

1.2 Application: Primarily for use as weldable leads for electronic component parts.

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 Alloys and Cobalt 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 E290 - Semi-Guided Bend Test for Ductility of Metallic Materials

ASTM E354 - Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt Alloys

2.3 Government Specifications: 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:

SAE Technical Board rules provide that: "All technical reports, including standards approved and published by SAE, are advisory only. Their use by anyone engaged in industry or trade or their use by governmental agencies is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E354, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min	max
Nickel + Cobalt	99.00	--
Magnesium	0.01	0.08
Titanium	0.01	0.05
Manganese	--	0.35
Iron	--	0.20
Carbon	--	0.15
Silicon	--	0.15
Copper	--	0.15
Sulfur	--	0.008

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

3.2 Condition: Cold drawn and bright annealed.

3.3 Properties: The product shall conform to the following requirements:

3.3.1 Tensile Strength: Shall be not higher than 75,000 psi (517 MPa), determined in accordance with ASTM E8.

3.3.2 Wrapping: Wire shall withstand, without cracking, wrapping at room temperature five full, closely-spaced turns around a diameter equal to the nominal diameter of the wire.

3.3.3 Bending: Ribbon shall withstand, without cracking, bending at room temperature in accordance with ASTM E290 through an angle of 180deg around a diameter equal to the nominal thickness of the ribbon.

3.4 Quality: The product, as received by purchaser, shall be uniform in temper and cross section. Surfaces shall 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; magnification up to 30X may be used to determine conformance.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to the following:

3.5.1 Round Wire:

TABLE I

Nominal Diameter Inch	Tolerance, Inch plus and minus
0.015 to 0.020, incl	0.0004
Over 0.020 to 0.030, incl	0.0005
Over 0.030 to 0.045, incl	0.0006

TABLE I (SI)

Nominal Diameter Millimetres	Tolerance, Millimetre plus and minus
0.38 to 0.50, incl	0.010
Over 0.50 to 0.75, incl	0.013
Over 0.75 to 1.15, incl	0.015

3.5.1.1 Round wire shall not be out-of-round by more than one-half the diametral tolerance.

3.5.2 Rectangular Ribbon:

3.5.2.1 Thickness:

<u>Nominal Thickness</u>		<u>Tolerance plus and minus</u>	
Inch	(Millimetre)	Inch	(Millimetre)
0.004 to 0.025, incl	(0.10 to 0.65, incl)	0.0007	(0.018)

3.5.2.2 Width:

<u>Nominal Width</u>		<u>Tolerance plus and minus</u>	
Inch	(Millimetres)	Inch	(Millimetre)
0.015 to 0.062, incl	(0.38 to 1.57, incl)	0.002	0.05

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be responsible 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 product conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling: Shall be in accordance with AMS 2371.

4.4 Reports:

4.4.1 The vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, nominal size, and quantity.

4.4.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

4.5 Resampling and Retesting: Shall be in accordance with AMS 2371.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification: