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

AEROSPACE MATERIAL SPECIFICATION

AMS5687G
Superseding AMS 5687F
Issued 7-1-48
Revised 1-15-77

UNS N06600

ALLOY WIRE, CORROSION AND HEAT RESISTANT
73Ni - 15.5Cr - 8.0Fe
Annealed

1. SCOPE:

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

1.2 Application: Primarily for lock wire and wire cloth requiring oxidation resistance superior to that of the 18-8 type of corrosion-resistant steel.

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

Printed in U.S.A.

3. TECHNICAL REQUIREMENTS

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 approved analytical methods:

	min	max
Carbon	--	0.06
Manganese	--	1.00
Silicon	--	0.50
Sulfur	--	0.015
Chromium	14.00	17.00
Nickel + Cobalt	72.00	--
Iron	6.00	10.00
Cobalt (3.1.1)	--	1.00
Columbium + Tantalum (3.1.1)	--	1.00
Titanium (3.1.1)	--	0.50
Aluminum (3.1.1)	--	0.35
Copper	--	0.50

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 from hot finished wire or rod, annealed, and descaled if necessary.

3.3 Properties: Wire shall conform to the following requirements:

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

TABLE I

Nominal Diameter Inches	Tensile Strength, psi, max	
	Coiled or Spooled	Straight Lengths
0.002 to 0.015, incl	130,000	--
Over 0.015 to 0.040, incl	115,000	--
Over 0.040	110,000	125,000

TABLE I (SI)

Nominal Diameter Millimetres	Tensile Strength, MPa, max	
	Coiled or Spooled	Straight Lengths
0.05 to 0.38, incl	896	--
Over 0.38 to 1.02, incl	793	--
Over 1.02	758	862

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.

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

3.5 Tolerances: Unless otherwise specified, tolerances shall be as specified in Table II.

TABLE II

Nominal Diameter Inches	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

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of wire 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 wire 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.

4.3 Sampling: Shall be in accordance with AMS 2371. Sampling for wrapping test shall be as specified in AMS 2371 for bend testing.

4.4 Reports:

4.4.1 The vendor of wire shall furnish with each shipment three copies of a report showing the results of tests for chemical composition of each heat and for tensile property and wrapping requirements on 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.