AERONAUTICAL
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 5699A

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ALLOY WIRE, CORROSION AND HEAT RESISTANT
Nickel Base - 15.5Cr - 7Fe - 2.3Ti - 1(Cb+Ta) - 0.7Al
Spring Temper

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Round wire.

3. APPLICATION: Primarily for helical springs for use at temperatures up to 750 F where relatively high stresses may be used but where greater relaxation and rate of relaxation can be tolerated than with AMS 5698 wire.

4. COMPOSITION:

Carbon	0.08 max
Manganese	1.0 max
Silicon	0.50 max
Sulfur	0.015 max
Chromium	14.0 - 17.0
Nickel + Cobalt	70.0 min
Cobalt, if determined	1.0 max
Columbium + Tantalum	0.7 - 1.2
Titanium	2.0 - 2.75
Aluminum	0.40 - 1.0
Iron	5.0 - 9.0
Copper	0.50 max

5. CONDITION: Unless otherwise specified, wire shall be cold drawn from hot finished wire or rod that has been previously ground or has had surface preparation (other than by pickling) for removal of seams and other injurious surface imperfections. Diameters over 0.012 to 0.250 in. incl, shall be copper coated and given a reduction of approximately 50 - 65% after the final process anneal. Diameters over 0.250 in. shall be copper coated and given a reduction of not less than 30% after the final process anneal.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Nominal Diameter Inch	Tensile Strength psi, min
0.012 to 0.250, incl	190,000
Over 0.250 to 0.418, incl	160,000

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

6.3 Tensile Properties After Precipitation Heat Treatment: Wire after being precipitation heat treated by heating to 1200 F + 25, holding at heat for 4 hr, and air cooling shall be capable of meeting the following requirements:

Nominal Diameter Inch	Tensile Strength psi, min
0.012 to 0.250, incl	220,000
Over 0.250 to 0.418, incl	200,000

7. QUALITY:

7.1 Wire shall be uniform in quality and condition, cylindrical, clean, and free from kinks, twists, scrapes, splits, cold shuts, and other injurious imperfections.

7.2 The surface shall have a smooth finish, free from pits, abrasions, and other injurious surface imperfections.

8. TOLERANCES: Unless otherwise specified, tolerances shall be as follows:

8.1 Diameter:

Nominal Diameter Inch	Tolerance, Inch Plus and Minus
0.012 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	0.001
Over 0.1875 to 0.406, incl	0.0015
Over 0.406 to 0.418, incl	0.002

8.2 Out of Roundness: Wire shall not be out of round by more than one-half the total permissible tolerance in 8.1.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the condition requirements and showing the results of tests to determine conformance to the chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, nominal size, and quantity.

9.2 Unless otherwise specified, 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, 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.