

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5699

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Revised

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

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Round wire.
3. APPLICATION: Primarily for helical springs for use at temperatures up to 850 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	0.5	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 - 2.5	
Aluminum	0.40 - 1.0	
Iron	5.0 - 9.0	
Copper	0.5	max

5. CONDITION: Unless otherwise specified, wire shall be copper coated and cold drawn with approximately 50-65% reduction in cross-sectional area after the final process anneal.
6. TECHNICAL REQUIREMENTS:
- 6.1 Tensile Properties:

Nominal Diameter Inch	Tensile Strength psi, min
0.250 and under	190,000

- 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.

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

Nominal Diameter Inch	Tensile Strength psi, min
0.250 and under	220,000

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

8. TOLERANCES:

- 8.1 Diameter: The following variations in diameter are permissible:

Nominal Diameter Inch	Tolerance, Inch	
	Plus	Minus
0.012 to 0.0149, incl	0.0003	0.0003
Over 0.0149 to 0.0199, incl	0.0004	0.0004
Over 0.0199 to 0.031, incl	0.0005	0.0005
Over 0.031 to 0.045, incl	0.0006	0.0006
Over 0.045 to 0.079, incl	0.0007	0.0007
Over 0.079 to 0.1875, incl	0.001	0.001
Over 0.1875 to 0.250, incl	0.001	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 of the results of tests for chemical composition of each heat in the shipment and for tensile properties of each size from each heat. This report shall include the purchase order number, material specification number, 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.