



AEROSPACE MATERIAL SPECIFICATION

AMS5961**REV. B**

Issued 1996-10
Reaffirmed 2018-10
Revised 2024-07

Superseding AMS5961A

Nickel Alloy, Corrosion- and Heat-Resistant, Wire
74Ni - 15.5Cr - 8.0Fe
Cold Reduced, Spring Temper
(Composition similar to UNS N06600)

RATIONALE

AMS5961B is the result of a Five-Year Review and update of the specification. The revision establishes size limits and associated reporting and identification requirements (see 1.1, 3.3.1.2, 3.6, 4.4.1, 5.2.3, and 8.3), updates composition testing and reporting requirements (see 3.1 and 3.1.1), moves a Section 8 note to Table 2 for clarity, adds surface finish option (see 3.2), adds strain rate requirements to tensile testing (see 3.3.1.1), adds country of origin to reporting requirements (see 4.4), and allows for the use of prior revisions (see 8.4). This standard is being reviewed as a part of SAE's Five-Year Review policy. The committee will look at possible changes to ordering information, testing protocols, and other potential updates throughout the standard.

1. SCOPE

1.1 Form

This specification covers a corrosion- and heat-resistant nickel alloy in the form of wire up to and including 0.563 inches (14.30 mm) in diameter.

1.2 Application

This wire has been used typically for springs and wire cloth requiring retention of spring properties up to 700 °F (371 °C) and corrosion resistance superior to that of the 18-8 type, corrosion-resistant steels, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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Documents



Standard, visit Sharing Hub

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2269 Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys

AMS2283 Composition Testing Methods for Nickel- and Cobalt-Based Alloys

AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E8/E8M Tension Testing of Metallic Materials

2.3 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

QQ-W-390 Wire Nickel-Chromium-Iron Alloy

2.4 Definitions

Terms in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2283 or by other analytical methods acceptable to the purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.15
Manganese	--	1.00
Silicon	--	0.50
Phosphorus	--	0.040
Sulfur	--	0.015
Chromium	14.00	17.00
Nickel	72.00	--
Iron	6.00	10.00
Cobalt	--	1.00
Columbium	--	1.00
Titanium	--	0.50
Tantalum	--	0.05
Aluminum	--	0.35
Copper	--	0.50

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2269.

3.2 Condition

Wire shall be cold reduced from hot-finished wire or rod. Wire shall have a thin coating of lubricant or be provided with a dull, matte finish, unless otherwise specified.

3.3 Properties

Wire shall conform to the following requirements:

3.3.1 Tensile Properties

Tensile properties shall be as shown in Table 2, determined in accordance with ASTM E8/8M.

Table 2A - Minimum tensile strength⁽¹⁾, inch/pound units

Nominal Diameter Inches	Tensile Strength ksi
Up to 0.057, incl	185
Over 0.057 to 0.114, incl	175
Over 0.114 to 0.229, incl	170
Over 0.229 to 0.329, incl	165
Over 0.329 to 0.375, incl	160
Over 0.375 to 0.500, incl	155
Over 0.500 to 0.563, incl	140
⁽¹⁾ Properties have been taken from QQ-W-390 and were not independently substantiated using SAE/AMS statistical guidelines.	

Table 2B - Minimum tensile strength⁽¹⁾, SI units

Nominal Diameter Millimeters	Tensile Strength MPa
Up to 1.45, incl	1276
Over 1.45 to 2.90, incl	1207
Over 2.90 to 5.82, incl	1172
Over 5.82 to 8.36, incl	1138
Over 8.36 to 9.52, incl	1103
Over 9.52 to 12.70, incl	1069
Over 12.70 to 14.30, incl	965
⁽¹⁾ Properties have been taken from QQ-W-390 and were not independently substantiated using SAE/AMS statistical guidelines.	