Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 5689A
Superseding AMS 5689

Issued 11-1-52
Revised 5-15-71

STEEL WIRE, CORROSION AND HEAT RESISTANT
18Cr - 9.5Ni - Ti (SAE 30321)
Solution Heat Treated

1. SCOPE:

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

1.2 Application: Primarily for screening and stitching applications requiring good corrosion resistance and which may be subjected to elevated temperatures during fabrication or in service. Material has satisfactory oxidation resistance up to approximately 1500 F (816 C), but is useful at that temperature only when stresses are low.

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., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2241 - Tolerances, Corrosion and Heat Resistant Steel Bars and Wire and Titanium and Titanium Base Alloy Bars and Wire
AMS 2248 - Chemical Check Analysis Limits, Wrought Heat and Corrosion Resistant Steels and 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, Pennsylvania 19103.

ASTM A370 - Mechanical Testing of Steel Products
ASTM E353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and other Similar Chromium-Nickel-Iron Alloys

2.3 Government Publications: Available from Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

Federal Test Method Standard No. 151 - Metals; Test Methods

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E353, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods.

	min	max
Carbon	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	8.00	11.00
Titanium	6xC	0.70
Molybdenum	--	0.75
Copper	--	0.50

3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2248.

3.2 Condition: Solution heat treated free from continuous carbide network, and bright finished.

3.3 Properties:

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

TABLE I

Nominal Diameter Inch	Tensile Strength, psi, max	
	Coils	Straight Lengths
0.010 to 0.020, incl	125,000	135,000
Over 0.020 to 0.125, incl	115,000	125,000
Over 0.125 to 0.250, incl	105,000	115,000

TABLE I (SI)

Nominal Diameter Millimeters	Tensile Strength, MN/m^2, max	
	Coils	Straight Lengths
0.254 to 0.508, incl	862	931
Over 0.508 to 3.175, incl	793	862
Over 3.175 to 6.350, incl	724	793

3.3.2 Bending: Wire shall withstand, without cracking, bending at room temperature flat on itself.

3.4 Quality:

3.4.1 Wire shall be uniform in quality and condition, cylindrical, clean, and free from kinks, twists, scrapes, splits, cold shuts, and other imperfections detrimental to fabrication or to performance of parts. The surface shall have a bright, smooth finish free from pits, abrasions, and other defects.

3.5 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2241.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor 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 assure that material 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 routine control tests.