

AEROSPACE MATERIAL SPECIFICATIONS

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

AMS 5673B

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STEEL WIRE, CORROSION RESISTANT 17Cr - 7Ni - 1Al Precipitation Hardening, Spring Temper

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **APPLICATION:** Primarily for springs requiring corrosion resistance and resistance to permanent set up to 600 F (316 C). Where parts may require welding during fabrication, strength of this cold worked material will be impaired.
3. **COMPOSITION:**

	min	max
Carbon	--	0.09
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	16.00 - 18.00	
Nickel	6.50 - 7.75	
Aluminum	0.75 - 1.50	

- 3.1 **Check Analysis:** Composition variations shall meet the requirements of the latest issue of AMS 2248.
4. **CONDITION:** Spring temper, cold drawn to required size. Coils or cut lengths shall be supplied as specified on purchase order.
5. **TECHNICAL REQUIREMENTS:**
 - 5.1 **Tensile Properties:**
 - 5.1.1 **Coils:** Wire furnished in coils shall have the tensile strength shown in Column A and shall conform to the tensile strength shown in Column B after heating to 900 F $\pm$ 10 (482.2 C $\pm$ 5.6), holding at heat for 1 hr, and air cooling.

Nominal Diameter Inch	Column A		Column B	
	As Cold Drawn Tensile Strength, psi		Precipitation-Hardened Tensile Strength, psi	
	min	max	min	max
0.030 to 0.041, incl	260,000	290,000	320,000	350,000
Over 0.041 to 0.051, incl	255,000	285,000	310,000	340,000
Over 0.051 to 0.061, incl	250,000	280,000	305,000	335,000
Over 0.061 to 0.071, incl	242,000	272,000	297,000	327,000
Over 0.071 to 0.086, incl	240,000	270,000	292,000	322,000
Over 0.086 to 0.090, incl	230,000	260,000	282,000	312,000
Over 0.090 to 0.100, incl	227,000	257,000	279,000	309,000
Over 0.100 to 0.106, incl	223,000	253,000	274,000	304,000
Over 0.106 to 0.130, incl	221,000	251,000	272,000	302,000

5.1.1 Coils: (Continued)

Nominal Diameter Inch	Column A		Column B	
	As Cold Drawn Tensile Strength, psi		Precipitation-Hardened Tensile Strength, psi	
	min	max	min	max
Over 0.130 to 0.138, incl	215,000	245,000	260,000	290,000
Over 0.138 to 0.146, incl	213,000	243,000	258,000	288,000
Over 0.146 to 0.162, incl	211,000	241,000	256,000	286,000
Over 0.162 to 0.180, incl	209,000	239,000	254,000	284,000
Over 0.180 to 0.207, incl	207,000	237,000	252,000	282,000
Over 0.207 to 0.225, incl	203,000	233,000	248,000	278,000
Over 0.225 to 0.306, incl	198,000	228,000	242,000	272,000
Over 0.306 to 0.440, incl	192,000	222,000	235,000	265,000

5.1.2 Straight Lengths: When straightened and cut lengths are ordered as cold drawn, the tensile requirement for each size may be reduced by 10% from the values shown in 5.1.1, Column A. Wire ordered in this condition shall conform to the tensile strength requirements shown in 5.1.1, Column B, after heating to $900\text{ F} \pm 10$ ($482.2\text{ C} \pm 5.6$), holding at heat for 1 hr, and air cooling.

5.2 Wrapping: As-cold-drawn wire shall withstand, without cracking, wrapping at room temperature one $\emptyset$ full turn around a diameter equal to the nominal diameter of the wire.

5.3 Coiling: The as-cold-drawn wire shall show a uniform pitch with no splits or fractures when wound in a tightly closed coil on an arbor of size shown in the table below and the resultant coil stretched to a permanent set of 4 times its as-wound length. This requirement shall apply only to wire having a diameter of 0.125 in. and under.

Nominal Diameter Inch	Arbor Diameter Inch
0.030 to 0.034, incl	0.102
Over 0.034 to 0.045, incl	0.145
Over 0.045 to 0.055, incl	0.212
Over 0.055 to 0.125, incl	0.250

6. QUALITY:

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

6.2 The surface shall have a smooth, cold drawn finish free from pits, abrasions, and other surface imperfections. Wire ordered for coiling on automatic spring winding machines shall be furnished with a lubricating coating suitable for this purpose.

7. TOLERANCES: The following variations in diameter are permissible:

Nominal Diameter Inch	Tolerance, Inch Minus Only
0.030 to 0.032, incl	0.001
Over 0.032 to 0.042, incl	0.0015
Over 0.042 to 0.312, incl	0.002
Over 0.312 to 0.440, incl	0.003