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

AMS 5673B

Issued 3-1-55
Revised 2-15-65

# 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 ± 10 (482.2 C ± 5.6), holding at heat for 1 hr, and air cooling.

| Nominal Diameter Inch | Column A As Cold Drawn Tensile Strength, psi min | Column A As Cold Drawn Tensile Strength, psi max | Column B Precipitation-Hardened Tensile Strength, psi min | Column B Precipitation-Hardened Tensile Strength, psi 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 As Cold Drawn Tensile Strength, psi min | Column A As Cold Drawn Tensile Strength, psi max | Column B Precipitation-Hardened Tensile Strength, psi min | Column B Precipitation-Hardened Tensile Strength, psi 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 F ± 10 (482.2 C ± 5.6), holding at heat for 1 hr, and air cooling.

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

5.3 Ø 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 |