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SURFACE VEHICLE RECOMMENDED PRACTICE

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Hard-Drawn Mechanical Spring Wire and Springs

1. ***Scope***—This SAE Recommended Practice covers the mechanical and chemical requirements of hard-drawn carbon-steel spring wire in two classes used for the manufacture of mechanical springs and wire forms generally employed for applications subject to static loads or infrequent stress repetitions. Class 2 is a higher tensile strength product. This specification also covers processing requirements of the springs and forms fabricated from this wire.

2. ***References***

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein.

2.1.1 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 227—Specification For Steel Wire, Cold-drawn For Mechanical Springs
ASTM A 227M—Specification For Steel Wire, Cold-drawn For Mechanical Springs (Metric)
ASTM A 510—Specification For General Requirements For Wire Rods And Coarse Round Wire, Carbon Steel
ASTM A 510M—Specification For General Requirements For Wire Rods And Coarse Round Wire, Carbon Steel (Metric)

3. ***Wire***

3.1 The wire shall conform to ASTM A 227/A 227M and ASTM A 510/A 510M.

3.2 Orders shall include the class to be supplied.

3.3 Rolling practice shall be controlled to insure that the finished wire shall have no seams greater than 3.5% of the wire diameter or 0.25 mm (0.010 in) whichever is the smaller, as measured on a transverse section.

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4. *Springs*

4.1 Heat Treatment—Tension and compression springs coiled from this wire shall be stress relieved for a minimum of 30 min at a temperature of 230 to 260 °C (450 to 500 °F) unless otherwise agreed upon between purchaser and supplier.

4.2 Surface—The surface condition of the finished parts shall be as described for the wire except in certain instances where shot peening might be used. In addition, there shall be no excessive coiling marks, nicks, or gouges which would affect the serviceability of the part.

4.3 Hydrogen Embrittlement—To relieve hydrogen embrittlement, electroplated parts shall be heated at 175 to 190 °C (350 to 375 °F) for a minimum of 2 h immediately after plating.

PREPARED BY THE SAE IRON AND STEEL TECHNICAL COMMITTEE DIVISION 17—SPRING WIRE

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