



Standard Specification for Stainless Steel Wire¹

This standard is issued under the fixed designation A 580/A 580M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers stainless steel wire, except the free-machining types. It includes round, square, octagon, hexagon, and shape wire in coils only for the more commonly used types of stainless steels for general corrosion resistance and high-temperature service. For bars in straightened and cut lengths, see Specifications A 276 or A 479/A 479M.

NOTE 1—For free-machining stainless wire, designed especially for optimum machinability, see Specification A 581/A 581M.

1.2 The values stated in either inch-pound units or SI (metric) units are to be regarded separately as standards; within the text and tables, the SI units are shown in [brackets]. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.3 Unless the order specifies the applicable “M” specification designation, the material shall be furnished to the inch-pound units.

2. Referenced Documents

2.1 ASTM Standards:

- A 276 Specification for Stainless and Heat-Resisting Steel Bars and Shapes²
- A 370 Test Methods and Definitions for Mechanical Testing of Steel Products³
- A 479/A 479M Specification for Stainless and Heat-Resisting Steel Bars, and Shapes for Use in Boilers and Other Pressure Vessels²
- A 555/A 555M Specification for General Requirements for Stainless Steel Wire and Wire Rods³
- A 581/A 581M Specification for Free-Machining Stainless Steel Wire and Wire Rods³
- E 527 Practice for Numbering Metals and Alloys (UNS)⁴

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.17 on Flat Stainless Steel Products.

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² Annual Book of ASTM Standards, Vol 01.05.

³ Annual Book of ASTM Standards, Vol 01.03.

⁴ Annual Book of ASTM Standards, Vol 01.01.

2.2 Society of Automotive Engineers Standard:
J 1086 Numbering Metals and Alloys⁵

3. Ordering Information

3.1 It is the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Such requirements may include, but are not limited to, the following:

- 3.1.1 Quantity (weight),
- 3.1.2 Name of material (stainless steel),
- 3.1.3 Type or UNS designation (Table 1),
- 3.1.4 Condition (4.1),
- 3.1.5 Finish (4.2),
- 3.1.6 Cross section (round, square, etc.),
- 3.1.7 Applicable dimensions including size, thickness and width.
- 3.1.8 ASTM designation A 580/A 580M and date of issue.
- 3.1.9 Coil diameter (inside or outside diameter, or both) and coil weight.
- 3.1.10 Special requirements.

NOTE 2—A typical ordering description is as follows: 5000 lb [2000 kg] Type 304, wire, annealed and cold drawn, ½ in. [13 mm] round, ASTM Specification A 580/A 580M dated _____. End use: machined hydraulic coupling parts.

4. Manufacture

4.1 Condition (Table 2):

4.1.1 *Condition A*—Annealed as a final heat treatment. Material in Condition A may be given a final cold drawing for size control or finish, or both, slightly raising tensile strength.

4.1.2 *Condition B*—Cold worked to higher strength.

4.1.3 *Condition T*—Heat treated to an intermediate temper generally by austenitizing, quenching, and tempering at a relatively low temperature.

4.1.4 *Condition H*—Heat treated to a hard temper generally by austenitizing, quenching, and tempering at a relatively low temperature.

4.2 Finish:

4.2.1 *Cold Drawn*—A finish resulting from a final cold drawing pass, generally with cold drawing lubricant left on.

⁵ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096.