Designation: A 510 – 03

Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel[1]

This standard is issued under the fixed designation A 510; 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 general requirements for carbon steel wire rods and uncoated coarse round wire in coils or straightened and cut lengths.

1.2 In case of conflict, the requirements in the purchase order, on the drawing, in the individual specification, and in this general specification shall prevail in the sequence named.

NOTE 1—A complete metric companion to Specification A 510 has been developed—Specification A 510M; therefore, no metric equivalents are presented in this specification.

2. Referenced Documents

2.1 *ASTM Standards:*

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products[2]

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment[3]

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products[2]

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications[4]

E 30 Test Methods for Chemical Analysis of Steel, Cast Iron, Open-Hearth Iron, and Wrought Iron[5]

E 112 Test Methods for Determining Average Grain Size[6]

E 527 Practice for Numbering Metals and Alloys (UNS)[7]

2.2 *SAE Standard:*

J 1086 Numbering Metals and Alloy[8]

2.3 *AIAG Standard:*

AIAGB-5 02.00 Primary Metals Identification Tag Application Standard[9]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *carbon steel*—steel in which no minimum content is specified or required for aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, or zirconium, or any other element added to obtain a desired alloying effect; when the specified minimum for copper does not exceed 0.40 %; or when the maximum content specified for any of the following elements does not exceed these percentages: manganese 1.65, silicon 0.60, or copper 0.60.

3.1.2 *Discussion*—In all carbon steels small quantities of certain residual elements unavoidably retained from raw materials are sometimes found that are not specified or required, such as copper, nickel, molybdenum, chromium, etc. These elements are considered as incidental and are not formally determined or reported.

—Elements may be specified to improve machinability of carbon steels such as sulfur and lead.

3.1.4 *coarse round wire—from 0.035 to 0.999 in. in diameter, inclusive*, wire that is produced from hot-rolled wire rods or hot-rolled coiled bars by one or more cold reductions primarily for the purpose of obtaining a desired size with dimensional accuracy, surface finish, and mechanical properties. By varying the amount of cold reduction and other wire mill practices, including thermal treatment, a wide diversity of mechanical properties and finishes are made available.

3.1.5 *Discussion*—Coarse round wire is designated by Steel Wire Gage numbers, common fractions, or decimal parts of an inch. The Steel Wire Gage system is shown in Table 1. Since the many gage systems in use may cause confusion, the purchaser is encouraged to specify wire diameters in inches or decimal parts, or both.

[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 A01.03 on Steel Rod and Wire.

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[2] *Annual Book of ASTM Standards*, Vol 01.03.

[3] *Annual Book of ASTM Standards*, Vol 01.05.

[4] *Annual Book of ASTM Standards*, Vol 14.02.

[5] *Discontinued*—See 1994 *Annual Book of ASTM Standards*, Vol 03.05.

[6] *Annual Book of ASTM Standards*, Vol 03.01.

[7] *Annual Book of ASTM Standards*, Vol 01.01.

[8] Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

[9] Available from Automotive Industry Action Group (AIAG), 26200 Lahser Rd., Suite 200, Southfield, MI 48034.

***A Summary of Changes section appears at the end of this standard.**

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