Designation: F 2282 – 03

Standard Specification for Quality Assurance Requirements for Carbon and Alloy Steel Wire, Rods, and Bars for Mechanical Fasteners[1]

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1. Scope

1.1 This specification establishes quality assurance requirements for the physical, mechanical, and metallurgical requirements for carbon and alloy steel wire, rods, and bars in coils intended for the manufacture of mechanical fasteners which includes: bolts, nuts, rivets, screws, washers, and special parts manufactured cold.

NOTE 1—The Steel Industry uses the term "quality" to designate characteristics of a material which make it particularly well suited to a specific fabrication and/or application and does not imply "quality" in the usual sense.

1.2 Wire size range includes 0.062 to 1.375 in.

1.3 Rod size range usually includes 7⁄32 in. (0.219) to 47⁄64 in. (0.734) and generally offered in 1⁄64 increments (0.0156).

1.4 Bar size range includes 3⁄8 in. (0.375) to 1½ in. (1.500).

1.5 Sizes for wire, rod and bar outside the ranges of paragraphs 1.2-1.4 may be ordered by agreement between purchaser and supplier.

1.6 Material is furnished in many application variations. The purchaser should advise the supplier regarding the manufacturing process and finished product application as appropriate. Five application variations are:

Cold Heading
Recessed Head
Socket Head
Scrapless Nut
Tubular Rivet

1.6.1 Wire is furnished for all five application variations.

1.6.2 Rod and bar are furnished to the single application variation; Cold Heading.

2. Referenced Documents

2.1 *ASTM Standards:*

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, and Cold-Finished, General Requirements[2]

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[2]

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

E 4 Practices for Force Verification of Testing Machines[3]

E 10 Test Method for Brinell Hardness of Metallic Materials[3]

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

E 112 Test Methods for Determining Average Grain Size[3]

E 381 Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings[3]

E 407 Practice for Microetching Metals and Alloys[3]

E 1077 Test Methods for Estimating the Depth of Decarburization of Steel Specimens[3]

F 1470 Guide for Fastener Sampling for Specified Mechanical Properties and Performance Inspection[5]

F 1789 Terminology of F16 Mechanical Fasteners[5]

2.2 *AIAG Standard:*

B-5 Primary Metals Tag Application Standard[6]

2.3 *IFI Standard:*

IFI-140 Carbon and Alloy Steel Wire, Rods, and Bars for Mechanical Fasteners[7]

2.4 *SAE Standards:*

J403 Chemical Compositions of SAE Carbon Steels[8]

J404 Chemical Compositions of SAE Alloy Steels[8]

J406 Methods of Determining Hardenability of Steels[8]

J415 Definitions of Heat Treating Terms[8]

3. Terminology

3.1 *Definitions:*

3.1.1 *annealing*—a process of heating to and holding steel at a given temperature for a given time and then cooling at a given rate, used to soften or produce changes, or both, in the microstructure of the steel to enhance formability and reduce tensile strength.

[1] This specification is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.93 on Quality Assurance Provisions for Fasteners.

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

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

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

[5] *Annual Book of ASTM Standards*, Vol 01.08.

[6] Available from AIAG, 26200 Lahser Road, Suite 200, Southfield, MI 48034.

[7] Available from IFI, 1717 E. 9th St., Suite 1105, Cleveland, OH 44114-2879.

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

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