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Endorsed by
Manufacturers Standardization Society
of the Valve and Fittings Industry
Used in USNRC-RDT Standards

Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both¹

This standard is issued under the fixed designation A 194/A 194M; 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 specification² covers a variety of carbon, alloy, and martensitic stainless steel nuts in the size range ¼ through 4 in. and metric M6 through M100 nominal. It also covers austenitic stainless steel nuts in the size range ¼ in. and M6 nominal and above. These nuts are intended for high-pressure or high-temperature service, or both. Grade substitutions without the purchaser's permission are not allowed.

1.2 Bars from which the nuts are made shall be hot-wrought. The material may be further processed by centerless grinding or by cold drawing. Austenitic stainless steel may be solution annealed or annealed and strain-hardened. When annealed and strain hardened austenitic stainless steel is ordered in accordance with Supplementary Requirement S1, the purchaser should take special care to ensure that 7.2.2, Supplementary Requirement S1, and Appendix X1 are thoroughly understood.

1.3 Supplementary requirements (S1 through S6) of an optional nature are provided. These shall apply only when specified in the inquiry, contract, and order.

1.4 This specification is expressed in both inch-pound units and in SI units. However, unless the order specifies the applicable "M" specification designation (SI units), the material shall be furnished to inch-pound units.

1.5 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, 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.

2. Referenced Documents

2.1 ASTM Standards:

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 A01.22 on Steel Forgings and Wrought Fittings for Piping Applications and Bolting Materials for Piping and Special Purpose Applications.

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² For ASME Boiler and Pressure Vessel Code applications see related Specification SA-194 in Section II of that code.

A 153/A 153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware³

A 276 Specification for Stainless Steel Bars and Shapes⁴

A 320/A 320M Specification for Alloy-Steel Bolting Materials for Low-Temperature Service⁵

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products⁴

A 962/A 962M Specification for Common Requirements for Steel Fasteners or Fastener Materials, or Both, Intended for Use at Any Temperature from Cryogenic to the Creep Range⁵

B 633 Specification for Electrodeposited Coatings of Zinc on Iron and Steel⁶

B 695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel⁶

B 696 Specification for Coatings of Cadmium Mechanically Deposited⁶

B 766 Specification for Electrodeposited Coatings of Cadmium⁶

E 112 Test Methods for Determining Average Grain Size⁷

2.2 *American National Standards:*⁸

B 1.1 Unified Screw Threads

B 1.13M Metric Screw Threads

B 18.2.2 Square and Hex Nuts

B 18.2.4.6M Metric Heavy Hex Nuts

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *Austenitic Grades*—All grades with a prefix of "8" or "9".

3.1.2 *Ferritic Grades*—Grades 1, 2, 2H, 2HM, 3, 4, 6, 6F, 7, 7M, and 16.

3.1.3 *Lot*:

³ *Annual Book of ASTM Standards*, Vol 01.06.

⁴ *Annual Book of ASTM Standards*, Vol 01.03.

⁵ *Annual Book of ASTM Standards*, Vol 01.01.

⁶ *Annual Book of ASTM Standards*, Vol 02.05.

⁷ *Annual Book of ASTM Standards*, Vol 03.01.

⁸ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

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