Designation: A 563M – 03

METRIC

Standard Specification for Carbon and Alloy Steel Nuts [Metric][1]

This standard is issued under the fixed designation A 563M; 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 chemical and mechanical requirements for eight property classes of hex and hex-flange carbon and alloy steel nuts for general structural and mechanical uses on bolts, studs, and other externally threaded parts.

NOTE 1—Throughout this specification, the term class means property class.

NOTE 2—Requirements for the four classes 5, 9, 10, and 12 are essentially identical with requirements given for these classes in ISO 898/II. Requirements for Classes 8S and 10S are essentially identical with requirements in an ISO 4775 Hexagon Nuts for High-Strength Structural Bolting with Large Width Across Flats, Product Grade B, Property Classes 8 and 10. Classes 8S3 and 10S3 are not recognized in ISO standards.

1.2 Classes 8S3 and 10S3 nuts have atmospheric corrosion resistance and weathering characteristics comparable to those of the steels covered in Specification A 588/A 588M. The atmospheric corrosion resistance of these steels is substantially better than that of carbon steel with or without copper addition (see 5.2). When properly exposed to the atmosphere, these steels can be used bare (uncoated) for many applications.

1.3 The nut size range for which each class is applicable is given in the table on mechanical requirements.

1.4 Appendix X1 gives guidance to assist designers and purchasers in the selection of a suitable class.

1.5 Appendix X2 gives data on the properties of slotted hex nuts and hex jam nuts.

NOTE 3—This specification is the metric companion of Specification A 563.

1.6 Terms used in this specification are defined in Specification F 1789 unless otherwise defined herein.

2. Referenced Documents

2.1 *ASTM Standards:*

A 153/A 153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware[2]

A 325M Specification for Structural Bolts, Steel Heat Treated 830 MPa Minimum Tensile Strength [Metric][3]

A 394 Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare[3]

A 490M Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints [Metric][3]

A 588/A 588M Specification for High-Strength Low-Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4 in. [100 mm] Thick[4]

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products[5]

B 695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel[6]

D 3951 Practice for Commercial Packaging[7]

F 568M Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners[3]

F 606M Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets [Metric][3]

F 812/F 812M Specification for Surface Discontinuities of Nuts, Inch and Metric Series[3]

F 1789 Terminology for F16 Mechanical Fasteners[3]

G 101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels[8]

2.2 *ANSI Standards:*[9]

B 1.13M Metric Screw Threads—M Profile

B 18.2.4.1M Metric Hex Nuts, Style 1

B 18.2.4.2M Metric Hex Nuts, Style 2

B 18.2.4.3M Metric Slotted Hex Nuts

B 18.2.4.4M Metric Hex Flange Nuts

[1] This specification is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.02 on Steel Bolts, Nuts, Rivets, and Washers.

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[2] *Annual Book of ASTM Standards*, Vol 01.06.

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

[4] *Annual Book of ASTM Standards*, Vol 01.04.

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

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

[7] *Annual Book of ASTM Standards*, Vol 15.09.

[8] *Annual Book of ASTM Standards*, Vol 03.02.

[9] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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

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