



Standard Specification for Carbon and Alloy Steel Nuts (Metric)¹

This standard is issued under the fixed designation A563M; 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 U.S. 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 A588/A588M. The atmospheric corrosion resistance of these steels is substantially better than that of carbon steel with or without copper addition (see 6.2). 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.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

NOTE 3—This specification is the metric companion of Specification A563.

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.

Current edition approved Nov. 1, 2013. Published January 2014. Originally approved in 1980. Last previous edition approved in 2007 as A563M – 07. DOI: 10.1520/A0563M-07R13.

2. Referenced Documents

2.1 ASTM Standards:²

- A153/A153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- A325M Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric)
- A394 Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare
- A490M Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)
- A588/A588M Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance
- A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
- B695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
- D3951 Practice for Commercial Packaging
- F568M Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners (Metric) (Withdrawn 2012)³
- F606M Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets (Metric)
- F812 Specification for Surface Discontinuities of Nuts, Inch and Metric Series
- F1789 Terminology for F16 Mechanical Fasteners
- G101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels

2.2 ANSI Standards:⁴

- B 1.13M Metric Screw Threads—M Profile
- B 18.2.4.1M Metric Hex Nuts, Style 1

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.