



Designation: F568M – 07

Standard Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners (Metric)¹

This standard is issued under the fixed designation F568M; 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 nine property classes of carbon and alloy steel externally threaded metric fasteners in nominal thread diameters M1.6 through M100 suited for use in general engineering applications.

1.2 This specification does not cover dimensional requirements for fasteners of any property class. When referencing this specification for procurement purposes, it is mandatory that size, type, style, and any special dimensions of the product be additionally specified.

1.2.1 In case of any conflict in requirements, the requirements of the individual product specification shall take precedence over those of this general specification.

1.2.2 The purchaser may specify additional requirements which do not negate any of the provisions of this general specification or of the individual product specification. Such additional requirements, the acceptance of which are subject to negotiation with the supplier, must be included in the order information (see Section 3).

1.3 Requirements for seven of the nine property classes, 4.6, 4.8, 5.8, 8.8, 9.8, 10.9, and 12.9, are essentially identical with requirements given for these classes in ISO 898-1. The other two, 8.8.3 and 10.9.3, are not recognized in ISO standards.

1.4 Classes 8.8.3 and 10.9.3 bolts, screws, and studs 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 5.2. When properly exposed to the atmosphere, these steels can be used bare (uncoated) for many applications.

1.5 When agreed on by the purchaser, Class 5.8 fasteners may be supplied when either Classes 4.6 or 4.8 are ordered;

Class 4.8 may be supplied when Class 4.6 is ordered; Class 8.8.3 may be supplied when Class 8.8 is ordered; and Class 10.9.3 may be supplied when Class 10.9 is ordered.

1.6 The product size range for which each property class is applicable is given in **Table 1** and **Table 2** on chemical composition requirements, and the mechanical requirements table (see **Table 3**).

1.7 **Appendix X1** gives conversion guidance to assist designers and purchasers in the selection of a suitable property class.

1.8 **Appendix X2** explains the significance of the property class designation numerals.

2. Referenced Documents

2.1 ASTM Standards:²

A153/A153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

A307 Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

A325 Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

A325M Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric)

A354 Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners

A449 Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use

A490 Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

A490M Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)

A574 Specification for Alloy Steel Socket-Head Cap Screws

A588/A588M Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield

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 Dec. 1, 2007. Published January 2008. Originally approved in 1979. Last previous edition approved in 2004 as F568M – 04. DOI: 10.1520/F0568M-07.

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.

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