



Standard Specification for Hardened Steel Washers¹

This standard is issued under the fixed designation F 436; 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.

1. Scope

1.1 This specification covers the chemical, mechanical, and dimensional requirements for hardened steel washers for use with fasteners having nominal thread diameters of ¼ through 4 in. These washers are intended for general-purpose mechanical and structural use with bolts, nuts, studs, and other internally and externally threaded fasteners. These washers are suitable for use with fasteners covered in Specifications A 325, A 354, A 449, A 490, and A 687.

1.2 The washers are designated by *type* denoting the material and by *style* denoting the shape.

1.2.1 The types of washers covered are:

1.2.1.1 *Type 1*—Carbon steel.

1.2.1.2 *Type 3*—Weathering steel. Atmospheric corrosion resistance and weathering characteristics are comparable to that of steels covered in Specifications A 588/A 588M and A 709/A 709M. The atmospheric corrosion resistance of these steels is substantially better than that of carbon steel with or without copper addition. See 5.1. When properly exposed to the atmosphere, these steels can be used bare (uncoated) for many applications.

1.2.2 The styles of washers covered are:

1.2.2.1 *Circular*—Circular washers in nominal bolt sizes ¼ through 4 in. suitable for applications where sufficient space exists and angularity permits.

1.2.2.2 *Beveled*—Beveled washers are square or rectangular, in nominal sizes ½ through 1½ in., with a beveled 1 to 6 ratio surface for use with American standard beams and channels.

1.2.2.3 *Clipped*—Clipped washers are circular or beveled for use where space limitations necessitate that one side be clipped.

NOTE 1—A complete metric companion to Specification F 436 has been developed—Specification F 436M; therefore no metric equivalents are presented in this specification.

2. Referenced Documents

2.1 ASTM Standards:

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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A 153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware²

A 325 Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength³

A 354 Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners³

A 449 Specification for Quenched and Tempered Steel Bolts and Studs³

A 490 Specification for Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength³

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] Thick⁴

A 687 Specification for High-Strength Nonheaded Steel Bolts and Studs³

A 709/A 709M Specification for Structural Steel for Bridges⁴

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products⁵

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

D 3951 Practice for Commercial Packaging⁷

F 606 Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets³

G 101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels⁸

3. Ordering Information

3.1 Orders for hardened steel washers under this specification shall include the following:

3.1.1 ASTM designation and year of issue,

3.1.2 Quantity (number of pieces by size),

3.1.3 Type and Style (see 1.2.1 and 1.2.2),

3.1.4 *Zinc Coating*—Specify the zinc coating process required, for example, hot-dip, mechanically deposited, or no preference (see 4.3),

3.1.5 Dimensions, nominal size, and other dimensions, if

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.