



## Standard Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare<sup>1</sup>

This standard is issued under the fixed designation A394; 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 the chemical and mechanical requirements of hexagon and square-head zinc-coated steel bolts and atmospheric corrosion-resistant bolts, in nominal thread diameters of 1/2, 5/8, 3/4, 7/8 and 1 in. for use in the construction of transmission towers, substations, and similar steel structures. The various types of bolts covered in this specification are:

1.1.1 *Type 0*—Hot-dip zinc-coated bolts made of low or medium carbon steel.

1.1.2 *Type 1*—Hot-dip zinc-coated bolts made of medium carbon steel, quenched and tempered.

1.1.3 *Type 2*—Withdrawn in 2005.

1.1.4 *Type 3*—Bare (uncoated), quenched and tempered bolts made of weathering steel.

1.2 **Annex A1** of this specification covers hot-dip zinc-coated steel ladder bolts, step bolts, and support-equipment bolts.

1.3 Nuts and washers that are supplied under this specification that are hot-dip zinc coated shall be in accordance with **4.4**.

1.4 Terms used in this specification are defined in Terminology **F1789**.

1.5 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 The following safety hazards caveat pertains only to the test methods portion, Section **11**, of this specification. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

**A563** Specification for Carbon and Alloy Steel Nuts

**D3951** Practice for Commercial Packaging

**F436** Specification for Hardened Steel Washers

**F606/F606M** Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets

**F788/F788M** Specification for Surface Discontinuities of Bolts, Screws, and Studs, Inch and Metric Series

**F1470** Practice for Fastener Sampling for Specified Mechanical Properties and Performance Inspection

**F1789** Terminology for F16 Mechanical Fasteners

**F2329** Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

**G101** Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels

#### 2.2 ASME Standards:<sup>3</sup>

**B1.1** Unified Screw Threads

**B18.2.1** Square and Hex Bolts and Screws

**B18.24** Part Identifying Number (PIN) Code System Standard for B18 Fastener Products

### 3. Ordering Information

3.1 Orders for products under this specification shall include the following:

3.1.1 Quantity (number of bolts and accessories).

3.1.2 Name of products, including accessories such as **A563** nuts and **F436** washers when desired.

3.1.3 Dimensions, including nominal bolt diameter and length. For bolts other than transmission-tower bolts, complete dimensions are required (see **Annex A1**).

3.1.4 Type of bolt (for example, Type 0, 1, or 3).

<sup>1</sup> 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.