



Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions¹

This standard is issued under the fixed designation F3125/F3125M; 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 chemical, physical and mechanical requirements for quenched and tempered bolts manufactured from steel and alloy steel, in inch and metric dimensions, in two strength grades, two types and two styles.

1.1.1 This specification is a consolidation and replacement of six ASTM standards, including; A325, A325M, A490, A490M, F1852 and F2280.

1.1.2 This consolidated standard is to ensure alignment between standards with the same intended end use and to simplify the use and maintenance of structural bolt specifications.

1.2 Intended Use:

1.2.1 Bolts manufactured under this specification are intended for use in structural connections covered in the Specification for Structural Joints Using High-Strength Bolts, as approved by the Research Council on Structural Connections.

1.2.2 Bolts in this specification are furnished in sizes from ½ to 1-½ in. inclusive and from M12 to M36 inclusive.

1.3 Classification:

1.3.1 Bolts are designated by grade or property class, which indicates inch or metric respectively.

1.3.2 Bolts are designated by type denoting raw material chemical composition.

1.3.3 Bolts are designated by style denoting Heavy Hex bolts or “Twist-Off” Style assemblies.

Grade	Min. Strength	Type		Style
A325	120 ksi	1	3	Heavy Hex Head
A325M	830 MPa	1	3	Heavy Hex Head
F1852	120 ksi	1	3	Twist-Off
A490	150 ksi	1	3	Heavy Hex Head
A490M	1040 MPa	1	3	Heavy Hex Head
F2280	150 ksi	1	3	Twist-Off

Type 1 - 120 ksi (830 MPa) - carbon steel, carbon boron steel, alloy steel or alloy steel with boron addition

Type 3 - 120 ksi (830 MPa) or 150 ksi (1040 MPa) - weathering steel
Type 1 - 150 ksi (1040 MPa) - alloy steel or alloy steel with boron addition

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

1.5 *Units*—The values stated in either SI units or inch pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.6 Table footnotes are requirements. Notes are advisory.

1.7 *The following safety hazard caveat pertains to the test methods portion 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:²

A194/A194M Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

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

A563 Specification for Carbon and Alloy Steel Nuts

A563M Specification for Carbon and Alloy Steel Nuts (Metric)

A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

B695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel

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 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.