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American Association State Highway and
Transportation Officials Standard
AASHTO No.: M 31

Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement¹

This standard is issued under the fixed designation A 615/A 615M; 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 deformed and plain billet-steel bars for concrete reinforcement in cut lengths and coils. The standard sizes and dimensions of deformed bars and their number designations are given in Table 1. The text of this specification references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.2 Bars are of three minimum yield levels: namely, 40 000 [280 MPa], 60 000 [420 MPa], and 75 000 psi [520 MPa], designated as Grade 40 [280], Grade 60 [420], and Grade 75 [520], respectively.

1.3 Hot-rolled plain rounds, in sizes up to and including 2 in. [50.8 mm] in diameter in coils or cut lengths, when specified for dowels, spirals and structural ties or supports shall be furnished under this specification in Grade 40 [280], Grade 60 [420], and Grade 75 [520]. For ductility properties (elongation and bending), test provisions of the nearest smaller nominal diameter deformed bar size shall apply. Requirements providing for deformations and marking shall not be applicable.

NOTE 1—Welding of the material in this specification should be approached with caution since no specific provisions have been included to enhance its weldability. When steel is to be welded, a welding procedure suitable for the chemical composition and intended use or service should be used. The use of the latest edition of ANSI/AWS D 1.4 is recommended. This document describes the proper selection of the filler metals, preheat/interpass temperatures, as well as, performance and procedure qualification requirements.

1.4 This specification is applicable for orders in either inch-pound units (as Specification A 615) or in SI units (as Specification A 615M).

1.5 The values stated in either inch-pound units or SI units are to be regarded as standard. Within the text, the SI units are

shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. Referenced Documents

2.1 ASTM Standards:

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling²

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products³

A 510 Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel³

A 510M Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel (Metric)³

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment⁴

A 706/A 706M Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

2.2 AWS Standard:

ANSI/AWS D 1.4 Structural Welding Code—Reinforcing Steel⁶

2.3 U.S. Military Standards:

MIL-STD-129 Marking for Shipment and Storage⁷

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage⁷

2.4 U.S. Federal Standard:

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)⁷

² Annual Book of ASTM Standards, Vol 01.04.

³ Annual Book of ASTM Standards, Vol 01.03.

⁴ Annual Book of ASTM Standards, Vol 01.05.

⁵ Annual Book of ASTM Standards, Vol 14.02.

⁶ Available from American Welding Society, 550 N.W. LeJeune Road, P.O. Box 351040, Miami, FL 33135.

⁷ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel, and Related Alloys and is the direct responsibility of Subcommittee A01.05 on Steel Reinforcement.

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