



Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement¹

This standard is issued under the fixed designation A 704/A 704M; 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 material in mat (or sheet) form fabricated from hot rolled, plain steel bars or rods to be used for the reinforcement of concrete. The mats shall consist of two layers of bars or rods which are assembled by welding at right angles to each other.

1.2 This specification is applicable for orders in either inch-pound units (as A 704) or in SI units [as A 704M].

1.3 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 this specification.

2. Referenced Documents

2.1 ASTM Standards:

A 185 Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement²

A 615/A 615M Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement²

3. Ordering Information

3.1 The purchaser should specify:

3.1.1 Quantity,

3.1.2 Size and spacing of members in each direction,

3.1.3 Plain bar or rod,

3.1.4 Grade required (Grade 40 or 60 [300 or 420] as appropriate),

3.1.5 Type of steel, as appropriate (see Section 4), and

3.1.6 ASTM designation and year of issue.

NOTE 1—A typical ordering description is as follows: 1000 welded bar mats; Grade 40; to ASTM A 704 – _____, 6 by 12 in.; ½ in. diameter by 120 in. longitudinal tip to tip, outer bars spaced 54 in.; ½ in. diameter by 60 in. transverse, outer bars spaced 108 in. [1000 welded bar mats; Grade 300; to ASTM A 704M – _____, 150 by 300 mm; 12 mm diameter by 3000 mm longitudinal tip-to-tip, outer bars spaced 1350 mm; 12 mm diameter by 1500 mm transverse, outer bars spaced 2750 mm].

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

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² Annual Book of ASTM Standards, Vol 01.04.

4. Materials

4.1 Plain bars or rods of Grades 40 and 60 [300 and 420] used in the manufacture of mats shall conform to Specification A 615 [A 615M].

4.2 Maximum size of bar and rod material shall be 5/8 in. [16 mm] nominal diameter. Minimum size of rod material shall be 7/32 in. [6 mm] nominal diameter.

5. Fabrication

5.1 Fabricated mats shall be composed of two layers of plain bars or rods substantially parallel and perpendicular to each other.

5.2 *Assembly*—Mats shall be assembled by means of welding to provide attachment at all intersections.

5.2.1 Welded joints shall withstand normal shipping and handling without becoming broken, but the presence of broken welds, regardless of cause, shall not constitute cause for rejection unless the number of broken welds per sheet exceed 1 % of the total, provided that not more than one half of the permissible maximum number of broken welds are located on any one bar or rod.

5.2.2 Welding shall be done in such a manner that the minimum tensile strength, yield strength, and elongation requirements for material as described in Section 4 shall be met when a specimen is tested across a point of weld. Weld shear strength requirements shall be in compliance with Section 6.

6. Mechanical Requirements

6.1 *Strength of Connections in Welded Plain Bar or Rod Mats*—In order to assure adequate weld shear strength between longitudinal and transverse member, weld shear strength tests, as described in 6.3.2, shall be made. The minimum average shear value in pounds-force [Newtons] shall be not less than 25 000 [172] multiplied by the nominal area of the larger member in square inches [square millimetres].

6.2 Number of Tests:

6.2.1 One bar or rod of each size or grade to be used in the fabrication of the mat shall be tested for conformance with the provisions of 4.1 or 4.2.2 for each 75 000 ft² [7000 m²] of mats or fraction thereof.

6.2.2 One sample consisting of longitudinal members with not less than two connections on the same transverse member shall be taken and tested for conformance with the provisions