



Standard Specification for Uncoated High-Strength Steel Bars for Prestressing Concrete¹

This standard is issued under the fixed designation A 722/A 722M; 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 uncoated high-strength steel bars intended for use in pretensioned and post-tensioned prestressed concrete construction or in prestressed ground anchors. Bars are of a minimum ultimate tensile strength level of 1035 MPa (150 000 psi).

1.2 Two types of bars are provided: Type I bar has a plain surface and Type II bar has surface deformations.

1.3 Supplementary requirements of an optional nature are provided. They shall apply only when specified by the purchaser.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment³

E 30 Test Methods for Chemical Analysis of Steel, Cast Iron, Open-Hearth Iron, and Wrought Iron⁴

3. Ordering Information

3.1 Orders for material under this specification should include the following information:

3.1.1 Quantity,

3.1.2 Name of material (uncoated high-strength bars for prestressing concrete),

3.1.3 ASTM designation and year of issue,

3.1.4 Size and length,

3.1.5 Type,

3.1.6 Special inspection requirements, if desired (see Section 12),

3.1.7 Special preparation for delivery, if desired (see Section 11), and

3.1.8 Supplementary requirements, if desired.

NOTE 1—A typical ordering description is as follows: 50 uncoated high-strength steel bars for prestressing concrete to ASTM A 722/A 722M —; 26 mm diameter, 12.20 m long, Type II; packed in accordance with A 700; meeting supplementary bending properties.

4. Materials and Manufacture

4.1 The bars shall be rolled from properly identified heats of ingot cast or strand cast steel. The standard sizes and dimensions of Type I and II bars shall be those listed in Table 1 and Table 2, respectively.

4.2 The bars shall be subjected to cold-stressing to not less than 80 % of the minimum ultimate strength, and then shall be stress relieved, to produce the prescribed mechanical properties.

5. Chemical Composition

5.1 An analysis of each heat of steel shall be made by the manufacturer from test samples taken during the pouring of each heat.

5.1.1 Choice and use of chemical composition and alloying elements, to produce the mechanical properties of the finished bar prescribed in 6.2, shall be made by the manufacturer, subject to the limitations in 5.1.2.

5.1.2 On heat analysis, phosphorus and sulfur shall not exceed the following:

Phosphorus	0.040 %
Sulfur	0.050 %

5.2 A product analysis may be made by the purchaser from the finished bar representing each cast or heat of steel. The phosphorus and sulfur contents thus determined shall not exceed the limits specified in 5.1.2 by 0.008 %.

5.3 Test Methods E 30 shall be used for referee purposes.

6. Mechanical Properties

6.1 All testing for mechanical properties shall be performed in accordance with the requirements of Test Methods and Definitions A 370.

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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² *Annual Book of ASTM Standards*, Vol 01.03.

³ *Annual Book of ASTM Standards*, Vol 01.05.

⁴ Discontinued. See 1994 *Annual Book of ASTM Standards*, Vol 03.05.