



Standard Specification for Steel Wire, Hard Drawn for Prestressing Concrete Tanks¹

This standard is issued under the fixed designation A 821/A 821M; 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, hard-drawn steel wire for use in the manufacture of prestressed concrete tanks and similar structures. In application, the wire is continuously wrapped on the structure maintaining tension by a device employing a wire drawing die, or mechanical tensioning system without redrawing.

1.2 This specification is applicable only to the condition of the wire as delivered to the user. It is not applicable to the properties or condition of the wire after application.

1.2.1 Type A wire is to be tensioned by drawing through a wire drawing die or by a mechanical system without redrawing.

1.2.2 Type B wire is drawn to finished size by the manufacturer for tensioning by a mechanical system without redrawing.

NOTE 1—Type A wire, when tensioned by drawing through a die, may not function properly if the user does not ensure that during application the surface of the wire is free of rust and foreign materials that can be detrimental to good wire drawing practice. Further, the user should ensure that proper wire drawing techniques are followed, including adequate lubrication, cooling, and proper die mechanics.

1.3 The values stated in either inch-pound or SI units are to be regarded as the standard. Within the text, the inch-pound units are shown in parentheses. 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 370 Test Methods and Definitions for Mechanical Testing of Steel Products²

A 510 Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel²

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

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴

3. Ordering Information

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

3.1.1 Quantity (weight),

3.1.2 Name of material (hard-drawn steel wire for prestressing concrete tanks, Type A or B),

3.1.3 Wire diameter (see Section 7),

3.1.4 Marking (see Section 13),

3.1.5 Certification, if required (see 12.1), and

3.1.6 ASTM designation and year of issue.

NOTE 2—A typical ordering description is as follows: 100 000 kg, Hard-Drawn Steel Wire for Prestressed Concrete Tanks Type A or B, 4.9 mm in diameter, 680 kg coils for shipment on returnable coil carriers, shrouded, conforming to ASTM A 821/A 821M-XX [220 000 lb, Hard-Drawn Steel Wire for Prestressed Concrete Tanks Type A or B, 0.192 in. in diameter, 1500 lb, coils for shipment on returnable coil carriers, shrouded, conforming to ASTM A 821/A 821M-XX].

3.2 Prelubrication, if required, shall be specified by the purchaser.

4. Manufacture

4.1 The steel shall be made by the open-hearth, basic-oxygen or electric-furnace process.

4.2 The steel should be of such quality, that the finished wire shall be free of detrimental pipe and undue segregation.

4.3 The wire shall be cold-drawn to produce the desired mechanical properties.

4.4 There shall be no welds or joints in the finished wire. Welds or joints made during drawing to promote continuity of operations shall be removed.

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 01.03.

³ Annual Book of ASTM Standards, Vol 01.05.

⁴ Annual Book of ASTM Standards, Vol 14.02.