



# Standard Specification for Steel Wire, Plain, for Concrete Reinforcement<sup>1</sup>

This standard is issued under the fixed designation A 82; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.*

## 1. Scope

1.1 This specification covers cold-drawn steel wire, as-drawn or galvanized, to be used as such, or in fabricated form, for the reinforcement of concrete, in sizes not less than 0.080 in. (2.03 mm) nominal diameter.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

## 2. Referenced Documents

### 2.1 ASTM Standards:

A 370 Test Methods and Definitions for Mechanical Testing of Steel Products<sup>2</sup>

A 641 Specification for Zinc-Coated (Galvanized) Carbon Steel Wire<sup>3</sup>

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment<sup>4</sup>

E 83 Practice for Verification and Classification of Extensometers<sup>5</sup>

### 2.2 U.S. Military Standards:

MIL-STD-129 Marking for Shipment and Storage<sup>6</sup>

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage<sup>6</sup>

### 2.3 U.S. Federal Standard:

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)<sup>6</sup>

## 3. General Requirements

3.1 When wire for concrete reinforcement is ordered by size number, the following relation between size number, diameter, and area shall apply:

Size Number	Nominal Diameter, in. (mm)	Nominal Area, in. <sup>2</sup> (mm <sup>2</sup> )
W0.5	0.080 (2.03)	0.005 (3.23)
W1.2	0.124 (3.15)	0.012 (7.74)
W1.4	0.134 (3.40)	0.014 (9.08)
W2	0.160 (4.06)	0.020 (12.90)
W2.5	0.178 (4.52)	0.025 (16.13)
W2.9	0.192 (4.88)	0.029 (18.70)
W3.5	0.211 (5.36)	0.035 (22.58)

<sup>1</sup> 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.

Current edition approved Aug. 31, 1990. Published October 1990. Originally published as A 82 - 21 T. Last previous edition A 82 - 90.

<sup>2</sup> Annual Book of ASTM Standards, Vol 01.03.

<sup>3</sup> Annual Book of ASTM Standards, Vol 01.06.

<sup>4</sup> Annual Book of ASTM Standards, Vol 01.05.

<sup>5</sup> Annual Book of ASTM Standards, Vol 03.01.

<sup>6</sup> Available from Standardization Documents Order Desk, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094.

Size Number	Nominal Diameter, in. (mm)	Nominal Area, in. <sup>2</sup> (mm <sup>2</sup> )
W4	0.226 (5.74)	0.040 (25.81)
W4.5	0.239 (6.07)	0.045 (29.03)
W5	0.252 (6.40)	0.050 (32.26)
W5.5	0.265 (6.73)	0.055 (35.48)
W6	0.276 (7.01)	0.060 (38.71)
W8	0.319 (8.10)	0.080 (51.61)
W10	0.357 (9.07)	0.100 (64.52)
W12	0.391 (9.93)	0.120 (77.42)
W14	0.422 (10.72)	0.140 (90.32)
W16	0.451 (11.46)	0.160 (103.25)
W18	0.479 (12.17)	0.180 (116.13)
W20	0.505 (12.83)	0.200 (129.03)
W22	0.529 (13.44)	0.220 (141.90)
W24	0.553 (14.05)	0.240 (154.80)
W26	0.575 (14.61)	0.260 (167.70)
W28	0.597 (15.16)	0.280 (180.60)
W30	0.618 (15.70)	0.300 (193.50)
W31	0.628 (15.95)	0.310 (200.00)

NOTE 1—These sizes represent the most commonly used items both welded wire fabric and wire usage. Other sizes can be used.

## 4. Ordering Information

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

4.1.1 Quantity (weight),

4.1.2 Name of material (cold-drawn steel wire for concrete reinforcement),

4.1.3 Wire size number,

4.1.4 Packaging (see Section 15), and

4.1.5 ASTM designation and year of issue.

NOTE 2—A typical ordering description is as follows: 100 000 cold-drawn steel wire for concrete reinforcement, Size No. W5 in 500 secured coils, to ASTM A 82 - \_\_\_\_\_.

## 5. Materials and Manufacture

5.1 The steel shall be made by one of the following processes: open-hearth, electric furnace, or basic-oxygen.

5.2 The wire shall be cold drawn from rods that have been hot rolled from billets.

5.3 Unless otherwise specified, the wire shall be supplied uncoated. When specified as galvanized, it shall be galvanized at finish size.

## 6. Mechanical Property Requirements

### 6.1 Tension Tests:

6.1.1 When tested as described in Test Methods and Definitions A 370, the material, except as specified in 6.1, shall conform to the tensile property requirements in Table based on nominal area of wire.

6.1.2 The yield strength shall be determined as described in Test Methods and Definitions A 370 at an extension