



Standard Specification for Steel Wire, Carbon, Drawn Galvanized and Galvanized at Size for Mechanical Springs¹

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This standard is issued under the fixed designation A 764; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This specification covers two finishes of round, zinc-coated, hard-drawn, carbon steel spring wire having properties and quality for the manufacture of mechanical springs and wire forms that are not subject to high stress or require high fatigue properties.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

- A 90 Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles²
- 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 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment⁴
- A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products³
- B 6 Specification for Zinc (Slab Zinc)⁵
- E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁶

2.2 U. S. Government Standards:⁷

- Fed. Std. No. 123 Marking for Shipment (Civil Agencies)
- MIL-STD-129 Marking for Shipment and Storage
- MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage

2.3 AIAG Standard:

- AG B-5 02.00 Primary Metals Identification Tag Application Standard⁸

3. Classification

3.1 Wire covered by this specification may be either hot dipped or electro-galvanized in the following finishes:

Finish 1—"Drawn galvanized" (zinc coating is applied prior to the final wire drawing operation) with a Regular or Type 1 coating on the final wire, in two classes of tensile strength.

Finish 2—"Galvanized at size" (zinc coating is applied after the final wire drawing operation) with a Regular, Type 1, or Type 3 coating, in two classes of tensile strength.

NOTE 1—Type 2 is being eliminated as it is no longer specified by users.

4. Ordering Information

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

- 4.1.1 Quantity (weight),
- 4.1.2 Diameter, finish, type of coating, class of tensile strength, name of material,
- 4.1.3 ASTM designation and date of issue,
- 4.1.4 Packaging (Section 15),
- 4.1.5 Cast or heat analysis report, if desired (Section 6), and
- 4.1.6 Test report, if desired (Section 14).

NOTE 2—A typical ordering description is as follows: 30 000 lb, 0.120 in. Finish 1, Type 1 Coating Drawn Galvanized, Class I, Steel Mechanical Spring Wire in 400-lb, 22-in. coils to ASTM A 764, dated _____.

5. Materials and Manufacture

5.1 The base metal of the wire shall be of good commercial quality steel.

5.2 A sufficient discard shall be made to ensure freedom from injurious piping and undue segregation.

5.3 The material shall be galvanized prior to cold drawing, or at an intermediate stage of cold drawing (Finish 1), or shall be galvanized after the final cold drawing (Finish 2).

5.4 The slab zinc when used shall be any grade of zinc conforming to Specification B 6.

6. Chemical Composition

6.1 Since the primary criteria of spring wire are the mechanical properties developed, steel composition is usually at the producer's discretion, compatible with the processing method.

6.2 *Cast or Heat Analysis (formerly Ladle Analysis)*—Each cast or heat of steel shall be analyzed by the manufacturer to determine compliance with the percentage of elements prescribed in Table 1. This analysis shall be from a test specimen preferably taken during the pouring of the cast or heat. When required, this shall be reported to the purchaser.

6.3 *Product Analysis (formerly Check Analysis)*—An analysis may be made by the purchaser from finished wire

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 A01.03 on Steel Rod and Wire.

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² Annual Book of ASTM Standards, Vol 01.06.

³ Annual Book of ASTM Standards, Vol 01.03.

⁴ Annual Book of ASTM Standards, Vols 01.01, 01.03, 01.04, and 01.05.

⁵ Annual Book of ASTM Standards, Vol 02.04.

⁶ Annual Book of ASTM Standards, Vol 14.02.

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

⁸ Available from the Automotive Industry Action Group, 26200 Lahser, Suite 200, Southfield, MI 48034.