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Standard Specification for Zinc-Coated (Galvanized) Steel Welded Wire Reinforcement, Plain and Deformed, for Concrete[1]

This standard is issued under the fixed designation A1060/A1060M; 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 zinc-coated steel welded wire reinforcement, plain and deformed, or a combination of deformed and plain wires, for reinforcement of concrete, in sizes not less than 0.080 in. [2.03 mm] and over nominal diameter for plain wire and 0.113 in. [2.87 mm] and over for deformed wire.

1.2 This specification is intended to be applicable to cold-worked wire, drawn or rolled, plain or deformed, coated in a continuous process.

1.3 An alternative to a continuous coating process of wire before fabrication is a hot-dip process, where the welded wire reinforcement is immersed in a bath of molten zinc.

NOTE 1—Data on the corrosion resistance of galvanized steels in concrete are limited. The user is cautioned that the laboratory testing performed on this material has been insufficient and may not accurately reflect the performance of the material when embedded in concrete as reinforcement.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A90/A90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment
A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
A1064/A1064M Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
B6 Specification for Zinc
B487 Test Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of Cross Section
E376 Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Testing Methods

2.2 *Military Standard:*[3]

MIL-STD-129 Marking for Shipment and Storage

2.3 *Federal Standard:*[3]

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

[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] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

***A Summary of Changes section appears at the end of this standard**

3.1.1 *continuous coating, n—of metallic coated steel products*, the process of uninterrupted passage of long lengths of steel products, usually steel sheet, tube, pipe, or wire, through the various processing steps such as cleaning and coating.

4. Ordering Information

4.1 Orders for zinc-coated welded wire reinforcement under this specification shall contain the following information:
4.1.1 Quantity (weight [mass] or square area),
4.1.2 Name of material (galvanized welded wire reinforcement),
4.1.3 Conforms to Specification A1064/A1064M.
4.1.4 Required zinc coating weight [mass] (coated before fabrication) or zinc coating thickness (coated after fabrication),
4.1.5 Packaging (see Section 13), and
4.1.6 ASTM designation and year of issue.

4.2 The purchaser shall have the option to specify additional requirements, including but not limited to, the following:
4.2.1 Wire size number, wire spacing, and sheet or roll width and length,
4.2.2 Minimum yield strength or Grade, and
4.2.3 Requirements for inspection (see Section 9),

5. General Requirements

5.1 The wire used in the manufacture of welded wire reinforcement shall conform to Specification A1064/A1064M. After galvanizing, the welded wire shall meet the required mechanical properties of Specification A1064/A1064M except for the bend test requirements as prescribed in Table 1 of this specification.

5.2 Welded wire reinforcement shall be furnished either in flat sheets, or in rolls, as specified by the purchaser.

5.3 The zinc used for coating shall be any grade that conforms to Specification B6.

6. Galvanizing

6.1 *Mass [Weight] Thickness of Coating and Test:*

6.1.1 This specification includes six classes of coating weight [mass] when the welded wire reinforcement is coated before fabrication and four coating thickness grades when the welded wire reinforcement is coated after fabrication. The weight [mass] of zinc coating is based on the measured diameter of the wire when the stripping method is performed and the nominal diameter for all other methods, and shall conform to the requirements shown in Table 2 or Table 3. Individual results not more than 10 % below the minimum values specified in Table 2 or Table 3 are allowed if the average of at least two samples from the same coil are equal to or greater than the minimum, individual results shall be not less than 1.08 oz/ft^2 [330 g/m^2].

6.1.1.1 When the product is coated before fabrication in a continuous coating process, coating weights are given in Table 2 for various zinc coating classes.

NOTE 2—Zinc coated wire produced as "regular coating" shall have the full surface covered with zinc, but there is no specified minimum weight of coating.

6.1.1.2 When the product is coated after fabrication in a hot-dip process, coating thickness are given in Table 3 for various zinc coating grades.

NOTE 3—At the purchaser's request the galvanized coating may be chromate treated. This is to minimize a reaction between the reinforcing steel and fresh portland cement paste. Proprietary chromating solutions of equivalent strength are permitted in place of the generic chemical treatment specified.

6.1.2 *Magnetic Thickness Measurements*—The weight [mass] of the coating may be determined by magnetic thickness gage measurements in accordance with Practice E376. The thickness measurement is used to calculate the weight [mass] by multiplying it by the surface area of coated wire and by the zinc density. Because this form of testing can yield inconsistent and potentially

TABLE 1 Mandrel Diameters for Test for Adherence of Zinc Coating Inch-Pound Units [SI Units]

Wire Diameter	Mandrel Diameters of Coating Classes and Grades		
	Regular and Class 1	Class 3 or A, 4, B, 5, and C	Grade 50, 60, 65, and 80
Under 0.148 [3.70]	1D[A]	3D	3D
0.148 [3.70] to 0.500 [12.7]	2D	4D	4D
over 0.500 [12.7]	3D	5D	5D

[A] D = nominal wire diameter being tested.