



Designation: A817 – 12 (Reapproved 2025)

Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire¹

This standard is issued under the fixed designation A817; 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 metallic-coated carbon steel wire used in the manufacture of chain-link fence fabric and marcelled tension wire. Three types of coatings are covered:

- 1.1.1 *Type I*—Aluminum-coated (aluminized),
- 1.1.2 *Type II*—Zinc-coated (galvanized), and
- 1.1.3 *Type III*—Zinc-5 % Aluminum-Mischmetal (Zn-5Al-MM) alloy-coated.

1.2 The chain-link fabric woven from wire in this specification is covered separately by Specifications [A491](#) for Type I, [A392](#) for Type II, and [F1345](#) for Type III.

1.3 The marcelled tension wire manufactured from wire in this specification is covered separately in Specifications [A824](#) and [F1664](#).

1.4 This specification does not cover the wire used for Specification [A392](#) when the chain-link fence producer applies the coating after the weaving process.

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

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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

¹ This specification is under the jurisdiction of ASTM Committee [A05](#) on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee [A05.12](#) on Wire Specifications.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[A370](#) Test Methods and Definitions for Mechanical Testing of Steel Products

[A392](#) Specification for Zinc-Coated Steel Chain-Link Fence Fabric

[A428/A428M](#) Test Method for Weight [Mass] of Coating on Aluminum-Coated Iron or Steel Articles

[A491](#) Specification for Aluminum-Coated Steel Chain-Link Fence Fabric

[A700](#) Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

[A824](#) Specification for Metallic-Coated Steel Marcelled Tension Wire for Use With Chain Link Fence

[A902](#) Terminology Relating to Metallic Coated Steel Products

[B6](#) Specification for Zinc

[B750](#) Specification for GALFAN (Zinc-5 % Aluminum-Mischmetal) Alloy in Ingot Form for Hot-Dip Coatings

[E29](#) Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

[E47](#) Test Methods for Chemical Analysis of Zinc Die-Casting Alloys (Withdrawn 1997)³

[E536](#) Test Methods for Chemical Analysis of Zinc and Zinc Alloys

[F1345](#) Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric

[F1664](#) Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence

2.2 International Lead Zinc Research Organization:

[GF-1](#) Standard Practice for Determination of Cerium and Lanthanum Compositions in Galfan Alloy (5 % Al-0.04 % La-0.04 % Ce Bal SHG Zn)⁴

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, see Terminology [A902](#).

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from International Lead Zinc Research Organization, P.O. Box 12036, Research Triangle Park, NC 27709.

4. Ordering Information

4.1 Orders for metallic-coated steel wire for chain link fence fabric or marcelled tension wire shall include the following information:

- 4.1.1 Quantity.
- 4.1.2 Name of product.
- 4.1.3 Coated wire diameter.
- 4.1.4 Type of coating (see 5.3).
- 4.1.5 Class of coating, if applicable (see Table 1 or Table 2).
- 4.1.6 Packaging requirements (see Section 14).
- 4.1.7 Certification or test report, or both, if specified (see Section 13).
- 4.1.8 ASTM designation and year of issue.

NOTE 1—A typical ordering description is as follows: 80 000-lb steelwire for chain-link fence fabric, 0.148-in. diameter, Type II, Class 2, in 500 to 600-lb catchweight coils on tubular carriers to ASTM A817 – _____.

5. Materials and Manufacture

5.1 The steel rod from which the wire is drawn shall be manufactured by the open-hearth, electric-furnace, or basic-oxygen process.

5.2 The wire shall be cold-drawn, then metallic-coated at finished size to produce the specified mechanical properties.

5.3 The wire shall be furnished with one of three types of coating, as specified:

- 5.3.1 *Type I—Aluminum-Coated (Aluminized)*, in one class of coating weight as specified in Table 1.
- 5.3.2 *Type II—Zinc-Coated (Galvanized)*, with coating weights as specified in Table 1.
- 5.3.3 *Type III—Zn-5Al-MM Alloy Coated*, with coating weights as specified in Table 1.

5.4 Type I coating shall be produced by a hot-dip process. Type II coating shall be produced by either a hot-dip or an electrolytic process at the option of the producer. Type III coating shall be produced by a hot-dip process.

5.5 The ingot or pig aluminum used for Type I coating shall conform to the following impurity limits: copper, 0.10 % max, iron, 0.50 % max.

5.6 Slab zinc if used for Type II coating shall be one of the appropriate grades that are described in Specification B6.

5.7 The ingot used for Type III coating shall conform to Specification B750.

5.7.1 *Method of Analysis*—The determination of chemical composition shall be made in accordance with suitable chemi-

TABLE 2 Breaking Strength

Specified Diameter of Coated Wire, in. (mm)	Breaking Strength, min, lbf (N)
0.192 (4.88)	2170 (9650)
0.177 (4.50) ^A	1950 (8670)
0.148 (3.76)	1290 (5740)
0.135 (3.43)	1075 (4780)
0.120 (3.05)	850 (3780)
0.113 (2.87)	750 (3340)

^ASize 177 in. is only used for tension wire, not chain-link fabric.

cal methods (Test Methods E47 or E536), or other methods. In case of dispute, the results secured by Test Methods E47 shall be the basis of acceptance.

5.7.2 A standard practice for X-ray fluorescence spectrometry for determination of cerium and lanthanum in a Zn-5Al-MM alloy has been established by the International Lead Zinc Research Organization (as Standard Practice GF-1).⁴

6. Mechanical Properties

6.1 The metallic-coated wire for chain-link fence fabric shall meet the minimum breaking strength shown in Table 2 when tested in accordance with Test Methods and Definitions A370.

6.2 The metallic coated wire for marcelled tension wire shall have a diameter of 0.177 in. (4.50 mm) and a breaking strength of 1950 lbf (8670 N) minimum and 3 200 lbf (14 230 N) maximum when tested in accordance with Test Methods and Definitions A370.

7. Size and Tolerance

7.1 The diameter of the coated wire shall be determined as the average of two readings taken at right angles to each other, and in accordance with Practice E29.

7.2 The permissible variation from the specified diameter of the coated wire shall be ± 0.005 in. (0.13 mm).

NOTE 2—It is recognized that the surfaces of heavy metallic coatings, particularly those produced by the hot-dip process, are not perfectly smooth. If the tolerance specified is rigidly applied to such irregularities that are inherent to the product, unjustified rejections of wire that would actually be satisfactory for use would occur. Therefore, it is intended that this tolerance be used in gaging the uniform areas of the coated wire.

8. Weight of Coating

8.1 Coating weights for Types I, II, or III shall conform to the requirements of Table 1.

8.2 *Coating Weight Determination* :

TABLE 1 Minimum Weight of Metallic Coating

Specified Diameter of Coated Wire, in. (mm)	Minimum Weight of Coating, oz/ft ² (g/m ²) of Uncoated Wire Surface					
	Type I	Type II, Class 3	Type II, Class 4	Type II, Class 5	Type III, Class 60	Type III, Class 100
0.192 (4.88)	0.40 (122)	1.00 (305)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)
0.177 (4.50) ^A	0.40 (122)	0.90 (275)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)
0.148 (3.76)	0.40 (122)	0.90 (275)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)
0.135 (3.43)	0.40 (122)	0.85 (259)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)
0.120 (3.05)	0.35 (107)	0.85 (259)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)
0.113 (2.87)	0.30 (92)	0.80 (244)	1.20 (366)	2.00 (610)	0.60 (183)	1.00 (305)

^ASize 177 in. is only used for tension wire, not chain-link fabric.