Designation: A 585 – 97

Standard Specification for Aluminum-Coated Steel Barbed Wire[1]

This standard is issued under the fixed designation A 585; 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 aluminum-coated steel barbed wire consisting of a strand of two wires, coated before fabrication, with 4-point barbs of either aluminum-coated steel or aluminum alloy. A choice of two types is provided, as designated by the spacing of the barbs (see 4.1).

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

2. Referenced Documents

2.1 *ASTM Standards:*

A 428 Test Method for Weight of Coating on Aluminum-Coated Iron or Steel Articles[2]

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Domestic Shipment[3]

A 902 Terminology Relating to Metallic Coated Steel Products[2]

2.2 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipments Civil Agencies[4]

2.3 *Military Standards:*

MIL-STD-129 Marking for Shipment and Storage[4]

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage[4]

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, see Terminology A 902.

4. Classification

4.1 Aluminum-coated steel barbed wire is supplied in a choice of two types as follows:

4.1.1 *Type I (Standard)*—With barbs spaced on 5-in. (127-mm) centers.

4.1.2 *Type II (High Security)*—With barbs spaced on 3-in. (76-mm) centers.

5. Ordering Information

5.1 Orders for barbed wire purchased under this specification shall include the following information:

5.1.1 Quantity (number of spools),

5.1.2 Length of spools (1320 ft or 1000 ft, see 8.4),

5.1.3 Type of barbed wire (Type I or II, see 4.1),

5.1.4 Certification if required, and

5.1.5 ASTM designation and year of issue.

5.2 All spools of barbed wire accepted by the purchaser shall be billed on the basis of the number and original length of the spools before sampling unless changed by contractual agreement.

NOTE 1—A typical ordering description is as follows: 20 spools aluminum-coated steel barbed wire, 1000 ft spools, Type II (High Security), certified, to ASTM A 585 – ____.

6. Materials

6.1 *Base Metals*—The base metal shall be steel of such quality and purity that, when drawn to the size of wire specified and coated with aluminum, the finished barbed wire shall be of uniform quality and have the properties and characteristics as prescribed in this specification.

6.2 *Aluminum-Coated Wire*—The wire used in the manufacture of this product shall meet the requirements of this specification, and shall be capable of being fabricated into barbed wire without the aluminum coating cracking or flaking to such an extent that any of the aluminum can be removed by rubbing with the bare fingers. Loosening or detachment, during fabrication, of small particles of aluminum formed by mechanical polishing of the surface of the aluminum-coated wire shall not be considered cause for rejection.

6.3 *Aluminum for Coating*—The ingot or pig aluminum used for coating shall conform to the following impurity limits:

Copper, max, %	0.10
Iron, max, %	0.50

6.4 *Materials for Barbs*:

6.4.1 Aluminum-coated steel wire, if used for the barbs, shall meet the requirements of 6.2.

6.4.2 Aluminum alloy wire, if used for the barbs, shall be Alloy 5000-H38, 6061-T94, or equal, as agreed to between the manufacturer and the purchaser at the time of purchase.

6.4.3 The choice of either aluminum-coated steel wire or aluminum alloy wire for the barbs shall be that of the manufacturer, unless otherwise specified by the purchaser.

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[2] *Annual Book of ASTM Standards*, Vol 01.06.

[3] *Annual Book of ASTM Standards*, Vol 01.05.

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

7. Size and Construction

7.1 All barbed wire furnished under this specification shall be fabricated from two strands of 12½-gage (0.099-in.) (2.51-mm) aluminum-coated steel wire, with 4-point barbs of 14-gage (0.080-in.) (2.03-mm) aluminum-coated steel or aluminum alloy wire.

8. Size and Permissible Variations

8.1 *Line Wire*—The permissible variation from the nominal diameter of the wire shall be ±0.005 in. (0.13 mm).

8.2 *Barbs*—Due to the mechanics of manufacture when forming the barbs, a certain amount of out-of-roundness can be expected, and this precludes barbs from being subjected to checks for other than nominal diameter and length. The barb length, measured from the center of the two strand wires, shall be ⅜ in. (9.5 mm) minimum.

8.3 *Spacing of Barbs*—Barbs shall be spaced as indicated in 4.1.1 or 4.1.2. The individual barb spacing shall be measured from the edge of one barb at the strand to the corresponding edge of the adjacent barb. Cumulative spacing is established by counting the total number of barbs in a 25-ft (7.6-m) length of barbed wire. Barbs are subject to relocation during fabrication and handling; therefore, a rigid interpretation of the spacing requirement may lead to undue rejections. Any sample, with 93.5 % of the individual barb spacings conforming to the specified spacing [±¾ in. (19 mm)] and containing a minimum of 55 barbs [5-in. (127-mm) spacing] or a minimum of 86 barbs [3-in. (76-mm) spacing] in 25 ft (7.6 m), shall be considered acceptable.

8.4 The length of barbed wire in each spool shall be 80 rods (402 m). This is equivalent to one quarter mile or 1320 ft. At the option of the manufacturer, 1000 ft (305 m) spools may be offered.

9. Joints and Workmanship

9.1 Splicing of individual wires by means of a wrap joint or an electric butt weld is permitted. Not more than three splices or joints shall exist in any spool of barbed wire. Such splices or joints shall be made in a workmanlike manner.

9.2 The strands shall be twisted with a uniform length of lay. The direction of twisting may be either right or left hand. Alternate left and right hand twisting is not permitted.

9.3 The barbs shall be sharp, well-formed, tightly wrapped, and spaced in accordance with 8.3.

10. Weight of Coating

10.1 The minimum weight of aluminum coating shall be 0.30 oz/ft^2 (90 g/m^2) on 12½-gage wire, and 0.25 oz/ft^2 (75 g/m^2) on 14-gage wire.

10.2 The aluminum coating shall be tested for weight by a strip test in accordance with Test Method A 428. Tests may be made either prior to or after fabrication of the barbed wire.

11. Breaking Strength

11.1 The minimum breaking strength of the stranded barbed wire shall be 950 lbf (4230 N). This breaking strength value reflects that of both strand wires together as one unit.

12. Sampling

12.1 For the purpose of tests, one spool from every 50 spools or fraction thereof in a lot shall be selected at random, or a total of seven samples, whichever is less. A lot shall consist of all the spools of a single type of barbed wire offered for delivery at the same time.

12.2 *Test Specimens*—A 4-ft (1.2-m) length of barbed wire shall be cut from the end of the spool for the tests prescribed in Sections 10 or 11. Each strand wire shall be tested for weight of coating. The breaking strength value shall be determined by having the twisted strand tested as a composite.

12.3 Instead of testing wire for weight of coating and breaking strength from the completed barbed wire in accordance with 11.2, the manufacturer may elect to establish compliance with Sections 10 and 11 by tests made on wire prior to fabrication. If the manufacturer makes this election, the purchaser still reserves the right to test wire from the completed barbed wire for compliance.

12.4 For the purpose of inspection, a maximum of two spools from the lot (as described in 12.1) may be subjected to observations for barb length and spacing, overall length, and general workmanship.

12.5 Instead of inspecting for length by unrolling full spools in accordance with 12.4, the purchaser and manufacturer may agree on a weight per spool related to wire size or measuring tools employed during manufacturing. The purchaser still reserves the right to confirm length by actual measurement.

12.6 Inspection for barb spacing is normally performed on the outer 25-ft (7.6-m) length of a spool; this permits repackaging of the spool. Any other selection shall be as agreed to between the manufacturer and the purchaser.

13. Retests and Rejection

13.1 Should one or more of the individual wire specimens fail the coating weight test, or a strand specimen fail the breaking strength test, the lot shall be subjected to retest. For retest purposes, four additional spools of barbed wire for each 50 spools offered shall be sampled. The lot size then becomes 50, except this lot size may vary slightly to accommodate pallet count when the barbed wire is palletized.

13.2 *Retesting for Coating Weight*—Should more than two of the individual strand wires of the retest specimens fail to meet the specified coating weight, or if any of the retest specimens has less than 75 % of the specified coating weight, the entire lot represented by the retest may be rejected.

13.3 *Retesting for Breaking Strength*—Should any of the retest specimens fail to meet the minimum breaking strength values specified, the entire lot represented by the specimens may be rejected.

13.4 Instead of rejecting the entire lot as provided for in 13.2 and 13.3, the producer or purchaser may test specimens from every spool, as provided for in 12.2, and the purchaser may reject only those spools failing the weight of coating or breaking strength requirements.

13.5 *Reinspection for Barb Spacing, Barb Length, and Overall Length*—Should either of the sample spools fail to meet the requirements of 8.2, 8.3, or 8.4, two additional spools shall be selected for inspection. If either of these spools fails to meet the requirements, the lot may be rejected.

14. Inspection

14.1 Unless otherwise specified in the purchase order or contract, the manufacturer is responsible for the performance of all inspection and test requirements specified in this specification. Except as otherwise specified in the purchase order or contract, the manufacturer may use his own or any other suitable facilities for the performance of the inspection and test requirements unless disapproved by the purchaser at the time the order is placed. The purchaser shall have the right to perform any of the inspection and tests set forth in this specification when such inspections and tests are deemed necessary to assure that the material conforms to prescribed requirements.

15. Certification

15.1 When specified in the purchase order or contract, a producer's or supplier's certification shall be furnished to the purchaser that the material was manufactured, sampled, tested, and inspected in accordance with this specification and has been found to meet the requirements. When specified in the purchase order or contract, a report of the test results shall be furnished.

16. Packaging and Marking

16.1 Unless otherwise specified, packaging, marking, and loading for shipment shall be in accordance with Practices A 700.

16.2 When specified in the contract or order, and for direct procurement by or direct shipment to the U.S. Government, when Level A is specified, preservation, packaging, and packing shall be in accordance with the Level A requirement of MIL-STD-163.

16.3 When specified in the contract or order, and for direct procurement by or direct shipment to the U.S. Government, marking for shipment, in addition to requirements specified in the contract or order, shall be in accordance with MIL-STD-129 for U.S. Military agencies and in accordance with Fed. Std. No. 123 for U. S. Government civil agencies.

17. Keywords

17.1 barbed wire; fencing material; metallic coated steel wire; steel wire; wire