Designation: A121 – 13

Standard Specification for Metallic-Coated Carbon Steel Barbed Wire[1]

This standard is issued under the fixed designation A121; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers metallic-coated steel barbed wire, consisting of a strand of two wires.

1.2 The barbed wire is available with aluminum, zinc, and zinc-5 % aluminum-mischmetal alloy coatings, with a number of coating weights, in a number of different constructions (designs), and in two grades. Not all designs are available in all coating types.

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

1.4 The text of this specification references notes and footnotes that provide explanatory information. These notes and footnotes (excluding those in tables) shall not be considered as requirements of the specification.

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

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

A641/A641M Specification for Zinc–Coated (Galvanized) Carbon Steel Wire

A700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment

A809 Specification for Aluminum-Coated (Aluminized) Carbon Steel Wire

A856/A856M Specification for Zinc-5 % Aluminum-Mischmetal Alloy-Coated Carbon Steel Wire

A902 Terminology Relating to Metallic Coated Steel Products

2.2 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)[3]

2.3 *Military Standards:*

MIL-STD-129 Marking for Shipment and Storage[3]

MIL-STD-163 Steel Mill Products Preparation for Shipment and Storage[3]

3. Terminology

3.1 *Definitions*—For definitions of terms not specified in this specification, refer to Terminology A902.

4. Classification

4.1 The barbed wire covered by this specification is classified as described in this section.

4.2 *Design Number*— Numbers describing standard sizes and constructions, as listed in Table 1.

4.3 *Metallic Coating Type:*

4.3.1 *Coating Type A*— Made from aluminum-coated strand wire. See 6.3. (Only one coating weight for each wire size.)

4.3.2 *Coating Type Z*— Made from zinc-coated strand wire. See Table 2.

4.3.3 *Coating Type ZA*— Made from zinc-5 % aluminum-mischmetal alloy (Zn-5AL-MM) coated strand wire. See Table 3.

4.4 *Metallic Coating Class*—The specified amount of coating (coating weight (mass)) on the strand wire.

4.5 *Grades:*

4.5.1 *Standard Grade*— Barbs spaced on 4 or 5-in. (102 or 127-mm) centers as indicated in Table 1.

4.5.2 *High-Security Grade*—Barbs spaced on 3-in. (76-mm) centers with Coating Type A, Z, or ZA only.

NOTE 1—The design numbers are related to the characteristics of the construction of the barbed wire, with the number groups related, in order, to the steel wire gage of the strand wires, number of barb points, spacing of barbs, steel wire gage of the barbs, and a letter indicating the shape of the barbs.

[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 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 Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098

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of its barb points as specified in Table 1 does not meet this minimum length.

8.3.1 Within a 25-ft (7.6-m) length of sample, 95 % of the barbs shall meet the minimum barb length.

9. Sampling and Testing

9.1 *Sampling*—For the purpose of tests, select one spool at random from every 50 spools or fraction thereof in a lot, or a total of seven samples, whichever is less. A lot shall consist of all spools of a single construction (Design Number) of barbed wire offered for delivery at the same time.

9.2 *Test Specimens for Physical Tests*—Cut a 4-ft (1.2-m) length of barbed wire from the end of each spool for tests prescribed in Sections 6 and 7. Determine the breaking strength value by testing the twisted strand as composite. Test each strand wire individually for weight of coating.

9.3 *Testing for Weight of Coating* —Coating weight for Types Z and ZA shall be determined in accordance with Test Method A90/A90M. Coating weight for Type A shall be determined in accordance with Test Method A428/A428M. Perform testing either before or after fabrication for the strand wires and for Type A steel barbs. Perform testing prior to fabrication for Type Z and ZA barbs, and certify the test results.

9.4 *Pretesting of Wire*—Instead of testing wire for breaking strength and weight of coating from the completed barbed wire in accordance with 9.2, the manufacturer, at his election, shall establish compliance with the requirements in Sections 6 and 7 by tests made on wire prior to fabrication. If the manufacturer makes this election, the purchaser still has the right to test wire from the completed barbed wire for compliance. It is recognized that during fabrication the barb is mechanically deformed and scraped, and some differences are likely in coating weight results on barbs tested before and after fabrication.

9.5 *Inspection for General Workmanship* —For the purpose of inspection, a maximum of two spools from the lot, as described in 9.1, shall be subjected to observations for barb length and spacing, overall length, and workmanship.

9.5.1 Instead of inspecting for length by unrolling full spools, the purchaser and manufacturer have the option of agreeing on a weight per spool related to wire size or measuring tools employed during manufacturing. The purchaser still reserves the right to confirm the length by actual measurement.

9.5.2 Inspection for barb spacing and barb length is normally performed on the outer 25-ft (7.6-m) length of a spool, which permits repacking of the spool. Any other selection shall be as agreed upon between the manufacturer and the purchaser.

10. Retests

10.1 *Lot Size for Retests*—If one or more of the individual wire specimens fail the coating weight, or if a strand specimen fails the breaking strength test, the lot shall be subject 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 spools, except variation in lot size is permitted to accommodate pallet count when the barbed wire is palletized.

10.2 *Retesting for Coating Weight* —If more than two of the individual strand wires of the retest specimens fail to meet the requirements of 6.3, or if any of the retest specimens has less than 75 % of the specified coating weight, the entire lot represented by the retest shall be rejected.

10.3 *Retesting for Breaking Strength* —If any of the retest specimens fail to meet the minimum breaking strength value in 7.7, the entire lot represented by the specimens shall be rejected.

10.4 *Reinspection for Barb Spacing, Barb Length, and Overall Length*—If either of the sample spools fails to meet the requirements for these dimensions, within the tolerances in Section 8, two additional spools shall be selected for inspection. If either of these spools fails to meet the requirements, the lot shall be rejected.

11. Inspection

11.1 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 contractor shall 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 inspections and tests set forth in this specification when such inspections and tests are deemed necessary to ensure that the material conforms to the prescribed requirements.

12. Rejection and Rehearing

12.1 Material that fails to conform to the requirements of this specification shall be rejected. Rejection shall be reported to the manufacturer or supplier promptly and in writing. In case of dissatisfaction with the results of the test, the manufacturer or supplier shall make claim for a rehearing.

12.2 Instead of rejecting the entire lot as provided in Section 10, the manufacturer has the option of testing specimens from every spool and rejecting only those spools failing the weight of coating or breaking strength requirements.

13. Certification

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

14. Packing and Package Marking

14.1 Unless otherwise specified, packaging, marking, and loading for shipment shall be in accordance with Practices A700.

14.2 When specified in the contract or order, and for direct shipment to the U.S. Government, when Level A is specified,

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preservation, packaging, and packing shall be in accordance with Level A requirement of MIL-STD-163.

14.3 When specified in the contract or order, and for the direct procurement by or direct shipment to the U.S. Government, marking for shipment, in addition to the 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.

15. Keywords

15.1 barbed wire; carbon steel wire; metallic coated steel wire; steel barbed wire; wire

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