Designation: A 390 – 06

Standard Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line)[1]

This standard is issued under the fixed designation A 390; 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 fence fabric intended for enclosure of poultry, or to prevent entry into special areas. It is available in three styles as:

1.1.1 *Poultry Netting*, consisting of a mesh of woven wire with openings hexagonal in shape,

1.1.2 *Poultry-and-Garden Fence Fabric*, consisting of a series of horizontal (line) wires with vertical (stay) wires wrapped around the line wires, forming rectangular openings, and

1.1.3 *Chick Fence Fabric*, similar to poultry-and-garden fabric except that the wires at the bottom of the fabric are placed at a closer spacing.

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

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 90/A 90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment

A 902 Terminology Relating to Metallic Coated Steel Products

B 6 Specification for Zinc

2.2 *U.S. Federal Standard:*

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

2.3 *U.S. Military Standards:*

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

3. Terminology

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

NOTE 1—The following term used in this specification is defined in Terminology A 902: *base metal*.

3.2 *Definitions of Terms Specific to This Standard:* Descriptions of Terms Specific to This Standard:

3.2.1 *netting*—a mesh of woven wire with openings hexagonal in shape. The style is as designated by design numbers shown in Table 1. The mesh may be further strengthened by addition of straight line wires spaced approximately 12 in. [305 mm] apart, except spaced at approximately 6-in. [152-mm] intervals for 12 and 18-in. [305 and 457-mm] netting heights. Design numbers are used in ordering the netting style desired.

3.2.2 *poultry-and-garden fence fabric and chick fence fabric*—fence styles constructed by a series of horizontal (line) wires with vertical (stay) wires wrapped around the line wires, forming rectangular openings. Table 2 and Table 3 along with Fig. 1 and Fig. 2 are intended to show the characteristics of each design number. Design numbers are used for ordering the desired fence style.

4. Ordering Information

4.1 Orders for poultry netting shall include the following information:

4.1.1 Name of material (poultry netting),

4.1.2 Quantity (number of rolls),

4.1.3 Design number (see 6.2),

4.1.4 Class of coating (see 10.1),

4.1.5 Certification if required (see Section 14), and

4.1.6 ASTM designation and year of issue.

4.2 Orders for poultry-and-garden fence fabric or chick fence fabric shall include the following information:

4.2.1 Name of material (poultry-and-garden fence fabric or chick fence fabric),

4.2.2 Style of fence fabric (see 3.2),

4.2.3 Quantity (number of rolls),

[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, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

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TABLE 1 Design Numbers for Poultry Netting (Furnished in 150-ft Rolls)

NOTE 1—*Design Numbers*: In accordance with trade practice, each design of netting is expressed by a combination of three numbers. The first designates the mesh opening in inches, the second, is the wire gauge size, and the third is the height in inches. For convenience, the information contained in the design number is repeated in separate columns.

Design Number, in./gauge/in.	Mesh Size, in.	Wire Gauge	Height of Netting, in.
1 by 20 by 12	1	20	12
1 by 20 by 18	1	20	18
1 by 20 by 24	1	20	24
1 by 20 by 36	1	20	36
1 by 20 by 48	1	20	48
1 by 20 by 60	1	20	60
1 by 20 by 72	1	20	72
2 by 20 by 24	2	20	24
2 by 20 by 36	2	20	36
2 by 20 by 48	2	20	48
2 by 20 by 60	2	20	60
2 by 20 by 72	2	20	72

4.2.4 Design (see 6.2),

4.2.5 Certification if required (see Section 14), and

4.2.6 ASTM designation and year of issue.

4.3 All rolls of poultry netting and poultry-and-garden fence fabric and chick fence fabric accepted by the purchaser shall be billed to him on the basis of the number and original length of the rolls before sampling unless changed by contractual arrangement. Poultry netting covered by this specification shall be furnished in 150-ft [46-m] rolls, poultry-and-garden fence fabric and chick fence fabric shall be furnished in 10-rod [50-m] rolls.

NOTE 2—A typical ordering description is as follows: Netting: 50 rolls 1 by 20 by 48 in., Class 1, galvanize before weaving certified to Specification A 390 dated , Poultry fence: 50 rolls poultry-and-garden fence fabric 1948-6-14½ Class 1 Galvanizing certified to Specification A 390 dated .

5. Zinc for Coating

5.1 The zinc used for the coating shall be any grade of zinc conforming to Specification B 6.

6. Manufacture

6.1 The base metal of the fabric shall be of a good commercial quality of steel wire.

6.2 The designs of netting, poultry-and-garden fence fabric, and chick fence fabric covered by this specification shall be in accordance with those shown in Table 1, Table 2, and Table 3.

7. Dimensions and Permissible Variations

7.1 The size of the mesh openings in the netting shall be 1 in. [25 mm] or 2 in. [51 mm] as specified (see Table 1). The opening tolerance shall be ±⅛ in. [3.2 mm] when measured across the flats.

7.2 The height of the netting and fence fabrics (center to center distance between top and bottom wires) shall not vary more than ±1 in. [25 mm].

7.3 The tolerance for fence fabrics individual line and stay wire spacing shall be ±⅜ in. [9.5 mm]. This does not alter the overall height of the fabric as designated in 7.2.

7.4 The length tolerance for all styles of netting and fence fabric covered by this specification shall be −0, +3 %.

7.5 Due to the mechanics of the manufacturing process, a certain amount of out-of-roundness can be expected on stay wires of the finished fence fabric. No limits are placed on out-of-roundness of wire in the fabric.

8. Workmanship

8.1 Splicing of individual line wires by means of a wrap joint or an electric butt weld is permitted. The maximum number of line wire splices or joints shall not exceed one half of the number of line wires in any roll of fence. Such splices or joints shall be made in a workmanlike manner.

8.2 Patching of voids in the poultry netting by means of hand weaving is permitted. Such repair shall be made in a workmanlike manner.

8.3 The fence fabrics shall have uniformly wrapped joints and all stay wires shall be properly spaced and substantially perpendicular to the line wires.

9. Sampling

9.1 *Samples*—For the purpose of tests, select at random, one roll from every 50 rolls or fraction thereof in a lot or a total of seven rolls, whichever is less. A lot shall consist of all the rolls of a single design offered for delivery at the same time.

9.2 *Test Specimens for Poultry Netting*—Specimens for testing shall consist of 1 ft^2[0.09 m^2] selected at any point in the width of the netting and taken from the end of the roll, but not to include the selvage. Subject a specimen from each sample to tests for weight of coating in accordance with Section 10.

9.3 *Test Specimens for Fence Fabric*—Cut a length of fabric, approximately 3 ft or 1 m long, from the end of the sample roll to include at least three of the vertical (stay) wires. The test specimens for weight of coating determination shall consist of a number of lengths cut from a single wire, excluding all wire knots, wraps, and welded sections, such that the total length of wire test is at least 6 in. [152 mm], but preferably about 12 in. [305 mm]. Test at least six test specimens for weight of coating in accordance with Section 10.

9.3.1 Select as follows:

9.3.1.1 One specimen from the top or bottom wires,

9.3.1.2 Three specimens from horizontal (line) wires other than the top or bottom wires, and

9.3.1.3 Two specimens from vertical (stay) wires.

9.4 Instead of testing wire from the completed fence fabric in accordance with 9.2 or 9.3, the manufacturer may elect to establish compliance with Section 10 of this specification 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 fence fabric.

10. Weight of Coating

10.1 The class of coating for netting shall be specified by the purchaser and shall be in accordance with the classes of coating prescribed in Table 4.

10.2 The weight of coating for the various gauges of wire composing the fence fabric shall be in accordance with the weights specified in Table 4.

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TABLE 2 Design Numbers of Poultry and Garden Fence (Furnished in 10-rod Rolls)

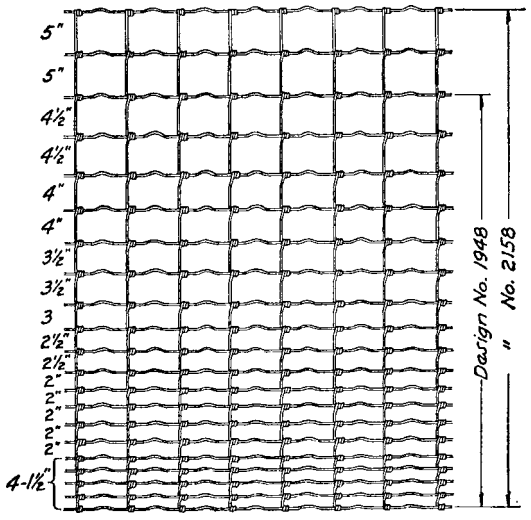
NOTE 1—*Design Numbers*: In accordance with trade practice, each design of fence is expressed by a group of three numbers separated by a dash (-). The first number of the group contains either three or four digits. In a number containing four digits, the first two represent the number of horizontal wires; and the second two the total height in inches. Where three digits are used, the first one represents the number of horizontal wires, and the remaining two the height in inches. The second number of the group indicates the spacing of the stay (vertical) wires, in inches. The third number of the group indicates the gauge of the intermediate line (horizontal) wires and of the stay wires. It does not apply to the top and bottom horizontal wires, the gauge for which is shown separately in the tables. For convenience, the information contained in the design-numbers, as set forth above, is repeated in separate columns within each table.

Design-Numbers	Number of Horizontal Wires	Height	Spacing of Stay Wires	Diameter of Intermediate Line Wires and Stay Wires	Diameter of Top and Bottom Wires
		No. 13 Poultry and Garden			
		Inches	Inches	Gauge No.	Gauge No.
1948-6-13	19	48	6	13	11
2158-6-13	21	58	6	13	11
		No. 14½ Poultry and Garden			
1948-6-14½	19	48	6	14½	11
2158-6-14½	21	58	6	14½	11

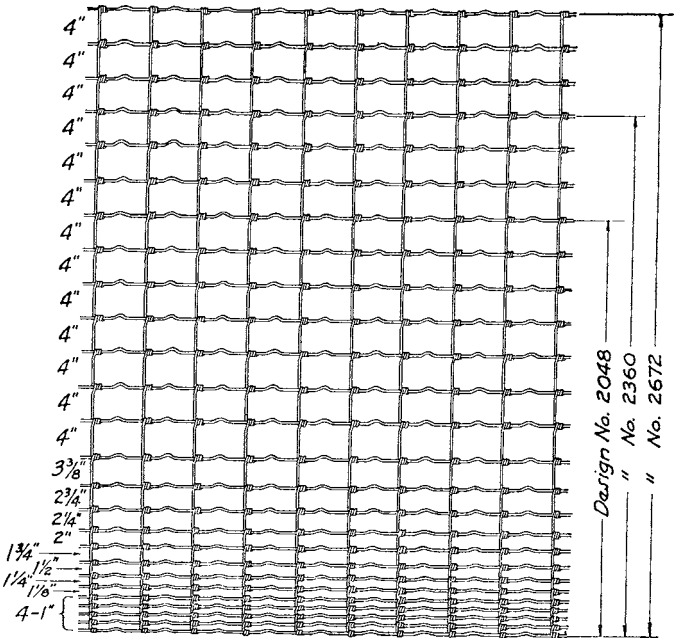
TABLE 3 Design Numbers of Chick Fence (Furnished in 10-rod Rolls)

Design-Numbers[A]	Number of Horizontal Wires	Height	Spacing of Stay Wires	Diameter of Intermediate Line Wires and Stay Wires	Diameter of Top and Bottom Wires
		No. 14½ Chick			
		Inches	Inches	Gauge No.	Gauge No.
2048-6-14½	20	48	6	14½	11
2360-6-14½	23	60	6	14½	11
2672-6-14½	26	72	6	14½	11
		No. 15½ Chick			
2048-6-15½	20	48	6	15½	12½
2360-6-15½	23	60	6	15½	12½

[A] See Note in Table 2.



NOTE 1—See Table 2 for design numbers
FIG. 1 Illustration of Poultry and Garden Fence



NOTE 1—See Table 3 for design numbers
FIG. 2 Illustration of Chick Fence

10.3 The zinc coating shall be tested for weight by a stripping test in accordance with Test Method A 90/A 90M, except that sample size shall be in accordance with Section 9 of this specification.

10.3.1 *Calculation of Surface Area for Poultry Netting*—By means of the following formula, the wire surface area in square feet contained in 1 ft^2[0.09 m^2] may be calculated to facilitate the computation of the surface area of the specimens.

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TABLE 4 Minimum Weights of Coating Zinc-Coated Steel Poultry Netting and Fence Fabric

Size, Steel Wire Gauge	Nominal Diameter of Zinc-Coated Wire, in. [mm]	Minimum Weight of Coating oz/ft^2 [g/m^2] of Uncoated Wire Surface	
		Class 1, Galvanized Before Weaving	Class 3, Galvanized After Weaving
No. 11	0.120 [3.05]	0.30 [92]	
No. 12½	0.099 [2.52]	0.28 [85]	
No. 13	0.092 [2.32]	0.28 [85]	
No. 14½	0.076 [1.93]	0.25 [76]	
No. 15½	0.067 [1.70]	0.20 [61]	
No. 20	0.034 [0.86]	0.10 [31]	0.40 [122]

$$\text{Surface area, ft}^2 = W/10.188\,d$$

where:

W = weight of stripped sample, pounds, and
d = diameter of stripped (bare) wire, inches

11. Retests and Rejection

11.1 *Retests*—If 20 % or more of the specimens tested fail for weight of coating, or any sample fails dimensional requirements, four additional rolls shall be taken at random from each 50 rolls or fraction thereof and tested for conformance.

11.2 *Rejection*—If 20 % or more of the total number of retest specimens fail for weight of coating, or any sample fails dimensional requirements, the entire lot represented by the samples may be rejected.

11.3 Instead of rejecting the entire lot as provided for in 11.2, the producer may test specimens from every roll as provided for in Section 7 and 9.2 or 9.3 and reject only those rolls failing to meet the requirements of this specification.

12. Inspection

12.1 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's own or any other suitable facility may be used 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 ensure that the material conforms to prescribed requirements.

13. Rejection and Rehearing

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

14. Certification

14.1 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.

15. Packaging and Marking

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

15.2 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 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.

16. Keywords

16.1 fence fabric; fencing material; steel wire; steel wire products; woven wire; zinc coated; zinc-coatings

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