Designation: A 392 – 07

Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric[1]

This standard is issued under the fixed designation A 392; 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 chain-link fence fabric, zinc coated either before or after weaving.

1.2 The values stated in inch-pound units are to be regarded as the standard.

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 370 Test Methods and Definitions for Mechanical Testing of Steel Products

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

A 817 Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire

B 6 Specification for Zinc

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 of Terms Specific to This Standard:*

3.1.1 *chain-link fence fabric*—a fencing material made from steel wire helically wound and interwoven in such a manner as to provide a continuous mesh without knots or ties except in the form of knuckling or of twisting the ends of the wires to form the selvage of the fabric. Variations to knuckled or twisted selvages are permissible.

3.1.2 *diamond count*—the number of diamond openings from one edge of the fabric to the other. The diamond count of a given fabric shall begin at the first completed diamond at one edge and continue to the unfinished (½) or full opening at the other edge.

3.1.3 *knuckling*—the type of selvage obtained by interlocking adjacent pairs of wire ends and then bending the wire ends back into a loop. The loop shall be closed or nearly closed to a measurement less than the diameter of the wire.

3.1.4 *twisting*—the type of selvage obtained by twisting adjacent pairs of wire ends together in a close helix of 1½ machine turns, which is equivalent to 3 full twists, and cutting the wire ends at an angle. The wire ends beyond the twist shall be at least ¼ in. [6.4 mm] long. This type of selvage is not used on fabric with a mesh size of less than 2 in. [50.8 mm].

4. Ordering Information

4.1 Orders for chain-link fence fabric purchased to this specification shall include the following information:

4.1.1 Quantity (Section 14),

4.1.2 Zinc coated after weaving or before weaving (Section 5),

4.1.3 Size of mesh (Section 7),

4.1.4 Size of wire (Section 8),

4.1.5 Height of fabric (Section 9),

4.1.6 Diamond count, if specified (Section 6),

4.1.7 Type of selvage (Section 10),

4.1.8 Class of coating (Section 11),

4.1.9 ASTM designation and year of issue, and

4.1.10 Certification if required (Section 17).

4.2 All rolls of fencing accepted by the purchaser shall be billed on the basis of the original footage of the rolls before sampling, unless changed by contractual arrangement.

NOTE 1—A typical ordering description is as follows: 25 rolls, 50 ft each, chain-link fence fabric, zinc coated after weaving, 2-in. mesh, 0.148-in. wire, 60 in. high, knuckled both selvages, Class 2 coating to ASTM A 392 - XX.

5. Materials

5.1 If zinc-coated before weaving, the wire from which the fabric is woven shall conform to all requirements of Specification A 817 for Type II coating, in the class of coating specified (Class 4 or Class 5).

[1] This specification is under the jurisdiction of ASTM Committee F14 on Fences and is the direct responsibility of Subcommittee F14.40 on Chain Link Fence and Wire Accessories.

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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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5.2 If zinc-coated after weaving, the base metal shall be steel of such quality and purity that, when drawn to the size of wire specified and coated with zinc after fabrication, the finished fencing shall be of uniform quality and have the properties and characteristics as prescribed in this specification.

5.3 *Zinc for Coating*—The slab zinc, when used for the coating, shall be any grade of zinc conforming to Specification B 6.

6. Weave

6.1 The wire shall be woven throughout in the form of approximately uniform square mesh, having parallel sides and horizontal and vertical diagonals of approximately uniform dimensions. The top and bottom of the fabric shall be knuckled or twisted as specified in Section 10.

6.2 A typical diamond count for each standard height is shown in Table 1. Other diamond counts are permissible provided that they are consistent within a lot. The purchaser has the option to specify the diamond count (see 4.1.6).

7. Size of Mesh

7.1 The size of mesh shall be as indicated in Table 4.

7.2 The permissible variation from the specified size of mesh shall be ±⅛ in. [3.2 mm] for all mesh sizes larger than 1¼ in. [31.75 mm], and ±1⁄16 in. [±1.6 mm] for all mesh sizes 1¼ in. [31.75 mm] and smaller.

7.3 The size of mesh shall be determined by measuring the minimum clear distance between the wires forming the parallel sides of the mesh, and determined as the average of two readings taken at right angles to each other.

8. Size of Wire

8.1 Chain-link fabric shall be fabricated from wire diameters as listed in Specification A 817, with a permissible variation from the specified diameter of the coated wire of ±0.005 in. [±0.13 mm].

9. Height of Fabric

9.1 Chain-link fabric shall be furnished in the standard heights shown in Table 4. Custom order fabric is available in heights to and including 20 ft. [6.10 m]. The height of fabric shall be the overall dimension from ends of twists or knuckles. Permissible variation from the specified height shall be ±1 in. [±25 mm] for standard selvage on fabric with mesh sizes 1 in. [25.4 mm] and over ±½ in. [±13 mm] for all fabric with mesh sizes less than 1 in. [25.4 mm].

10. Selvage

10.1 Unless otherwise specified by the purchaser, fabrics with 2 or 2⅛ in. [50 or 54 mm] mesh, in heights 60 in. [1520 mm] and under shall be knuckled at both selvages. Fabric 72 in. [1830 mm] high and over shall be knuckled at one selvage and twisted at the other. (**Warning—**Twisted selvages for fence fabric under 72 in. [1830 mm] in height are not recommended because of consumer safety considerations.)

10.2 The selvages of fabrics with meshes of less than 2 in. [50 mm] shall be knuckled.

11. Weight of Zinc Coating

11.1 The weight of zinc coating on the fabric may be ordered in two coating weight classes as follows:

11.1.1 *Class 1*—The weight of zinc coating shall not be less than 1.2 oz/ft^2 [366 g/m^2] of uncoated wire surface as determined from the average of two or more specimens, and not less than 1.08 oz/ft^2[330 g/m^2] of uncoated wire surface for any individual specimen.

11.1.2 *Class 2*—The weight of zinc coating shall not be less than 2 oz/ft^2 [610 g/m^2] of uncoated wire surface as determined from the average of two or more specimens, and not less than 1.8 oz/ft^2 [500 g/m^2] of uncoated wire surface for any individual specimen.

NOTE 2—Fabric galvanized after fabrication is normally not produced with a Class 2 coating on 0.120-in. [3.05-mm] or 0.113-in. [2.87-mm] wire or with mesh sizes smaller than 2 inches.

11.2 On fabric galvanized after weaving, the weight of coating shall be determined on one or more pieces of wire removed from the fabric. These specimens may be of any length over 12 in. [300 mm] and shall include both bends and straight sections, but shall not include either twists or knuckles.

11.3 The weight of coating shall be determined in accordance with Test Method A 90/A 90M.

TABLE 1 Typical Diamond Count[A]

NOTE 1—Other diamond counts are permitted (see 6.2).
NOTE 2— For fabric heights over 144 in., see 6.2.
NOTE 3—Variations to knuckled or twisted selvage may affect diamond count (see 6.2).

Nominal Diameter Coated Wire, in.	Size of Mesh, in.	Height of Fence Fabric, in.									
		36	42	48	60	72	84	96	108	120	144
0.192	2	10½	12½	13½	17½	20½	24½	27½	31½	34½	41½
0.148	2	10½	12½	13½	17½	20½	24½	27½	31½	34½	41½
0.148	1¼	. . .	. . .	23	29	35	41	46	52	58	70
0.148	1	20	23	27	33	39	45	53	61	67	79
0.120	2	10½	12½	14½	17½	20½	24½	. . .	. . .	. . .	. . .
0.120	1¾	. . .	. . .	. . .	. . .	. . .	. . .	31½	35½	39½	47½
0.120	1	20	23	27	33	39	45	53	61	67	79
0.113	2⅛	9½	11½	13½	16½	19½	. . .	. . .	. . .	. . .	. . .

[A]See Appendix X1 for metric equivalents and Fig. 1 for mesh sizes less than 1 in. [25.4 mm].

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TABLE 2 Available Mesh Sizes and Zinc Coating Weights[A]

Specified Diameter of Coated Wire, in. [mm]	Mesh Sizes with a Class 1 2.00 oz/ft^2(610) coating, in.	Mesh Sizes with a Class 2 1.20 oz/ft^2(366) coating, in.
0.192 [4.88]	1¾ and 2	2
0.148 [3.76]	½ , ⅝ , 1, 1¼ , 1¾ , and 2	1¾ and 2
0.120 [3.05]	⅜ , ½ , ⅝ , 1, 1¼ , 1¾ , and 2	. . .
0.113 [2.87]	2⅛	. . .

[A]Mesh sizes of 1¼ in. or smaller are typically produced with Galvanized before Weave product.

TABLE 3 Breaking Strength

Specified Diameter of Coated Wire, in. [mm]	Breaking Strength, min, lbf [N]
0.192 [4.88]	2170 [9650]
0.148 [3.76]	1290 [5740]
0.135 [3.43]	1290 [5740]
0.120 [3.05]	850 [3780]
0.113 [2.87]	750 [3340]

TABLE 4 Sizes of Wire and Mesh[A]

NOTE 1— For fabrics heights over 144 in., see 9.1.

Specified Diameter of Coated Wire, in.	Size, Coated Wire Gauge	Size of Mesh, in.[B]	Height of Fence Fabric, in.									
0.192	6	2	36	42	48	60	72	84	96	108	120	144
0.148	9	2	36	42	48	60	72	84	96	108	120	144
0.148	9	1¼[C]	. . .	. . .	23	29	35	41	46	52	58	70
0.148	9	1	36	42	48	60	72	84	96	108	120	144
0.148	9	½	36	42	48	60	72	84	96	108	120	144
0.120	11	2	36	42	48	60	72	84	. . .	. . .	. . .	. . .
0.120	11	1¾	. . .	. . .	. . .	. . .	. . .	. . .	96	108	120	144
0.120	11	1¼[C]	. . .	. . .	48	60	72	84	96	108	120	144
0.120	11	1	36	42	48	60	72	84	96	108	120	144
0.120	11	⅜[D]	36	42	48	60	72	84	96	108	120	144
0.120	11	½[D]	36	42	48	60	72	84	96	108	120	144
0.120	11	⅝	36	42	48	60	72	84	96	108	120	144
0.113	11½	2⅛	36	42	48	60	72	. . .	. . .	. . .	. . .	. . .

[A]See Appendix X1 for metric equivalents.
[B]See Fig. 1 for mesh dimensions for ⅝ in., ½ in., and ⅜ in. fence fabric. These sizes are typically used for high security requirements.
[C]This mesh and smaller is recommended for swimming pools.
[D]These sizes are designed for security purposes.

12. Breaking Strength

12.1 Wire constituting the fabric shall meet the minimum breaking strength listed in the Breaking Strength table of Specification A 817 when tested in accordance with Test Methods and Definitions A 370. Specimens to establish conformance to this requirement shall consist of individual pickets from a section of the fence fabric. The specimens shall be of sufficient length so as to be firmly gripped in the testing machine after straightening. The actual gage length (distance between jaws) of the specimen shall be limited to the undeformed length of wire between the two adjacent straightened bends.

13. Workmanship

13.1 Chain-link fence fabric shall be produced by methods recognized as good commercial practices. The zinc coating on galvanized-after-weaving fabric shall be applied in a continuous process and shall not be applied to the fabric in roll form.

13.2 Excessive roughness, blisters, sal ammoniac spots, bruises, and flaking shall be noted. These and other defects, if present to any considerable extent, shall provide a basis for rejection.

NOTE 3—On fabric that is zinc-coated before weaving, rust formations on the cut ends of the wire at the fabric selvages are inherent characteristics of this material and do not warrant rejection of the fabric.

14. Standard Length of Rolls

14.1 The standard length of roll shall be 50 ft [15.24 m] ± 1 % except as otherwise agreed upon at the time of purchase.

14.2 The length of roll shall be determined by unrolling a roll of fabric on a flat surface and exerting tension by appropriate means to remove all slack. The tension applied shall not reduce the actual height of the fabric by more than 1/16 in./ft [5.3 mm/m] of height or by more than ½ in. [12.7 mm], whichever is less.

15. Sampling and Number of Tests

15.1 One roll from every 50 rolls or fraction thereof in a lot shall be taken at random as a sample for test purposes. In no case shall less than two samples be tested, except when the lot is less than 10 rolls, only one roll shall be selected for the sample.

15.2 Sample rolls selected shall be inspected for weave (Section 6), size of mesh (Section 7), diamond count (6.2), wire size (Section 8), height of fabric (Section 9), selvage (Section 10) and length (Section 14).

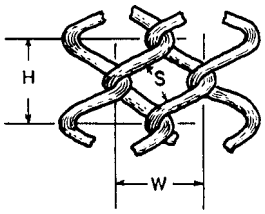
15.3 On galvanized-after-weaving fabric, test specimens taken from the outside end of the sample rolls shall be tested for breaking strength (Section 12) and weight of zinc coating (Section 11).

15.4 If any specimen tested fails to meet the requirements of this specification, the roll represented by the specimen shall be rejected and two additional rolls shall be tested, both of which shall meet the requirements in every respect; otherwise, the lot represented by the samples may be rejected.

16. Inspection

16.1 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.

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Selvage, S	Height, H, in.	Width, W, in.
⅜ in. mesh [9 mm]	¾ [19 mm]	¾ [19 mm]
½ in. mesh [13 mm]	15⁄16 [24 mm]	15⁄16 [24 mm]
⅝ in. mesh [16 mm]	1⅛ [29 mm]	1⅛ [29 mm]

FIG. 1 Mesh Dimensions for ⅜ in., ½ in., and ⅝ in. Fence Fabric

17. Certification and Reports

17.1 When requested by the purchaser in the contract or order, a producer's or supplier's certification 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 tests results shall be furnished.

18. Packaging, Marking, and Loading

18.1 Each length of chain-link fence fabric shall be tightly rolled and firmly tied. Each roll shall carry a tag showing the class of coating, the specified wire size, the mesh size, the specified length and height of fabric in the roll, ASTM Designation A 392 and the name or mark of the manufacturer.

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

18.3 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 Level A requirements of MIL-STD-163.

18.4 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 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 civil agencies.

19. Keywords

19.1 chain link fence; steel; coatings; zinc (galvanized); fence/fencing materials; chain link; zinc coated (galvanized) iron and steel articles; zinc coated (galvanized) steel chain link fence fabric

APPENDIX

(Nonmandatory Information)

X1. APPROXIMATE METRIC EQUIVALENTS FOR TABLES 1 AND 2

X1.1 See Table X1.1.

TABLE X1.1 Approximate Metric Equivalents for Tables 1 and 2

Sizes of Wire and Mesh		Height of Fence Fabric	
in.	mm	in.	mm
0.192	4.88	36	910
0.148	3.76	42	1070
0.120	3.05	48	1220
0.113	2.87	60	1520
1	25	72	1830
1¼	32	84	2130
1¾	44	96	2440
2	50	108	2740
2⅛	54	120	3050
		144	3660

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