



Standard Specification for ZINC-COATED STEEL WIRE STRAND¹

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1. Scope

1.1 This specification covers five grades of zinc-coated, steel wire strand, composed of a number of round, steel wires, with four weights of zinc coatings, suitable for use as guys, messengers, span wires, and for similar purposes.

1.2 The five grades covered are as follows: (1) Utilities, (2) Common, (3) Siemens-Martin, (4) High-Strength, and (5) Extra High-Strength. Minimum breaking strengths of strand for each grade are specified in Table 1.

1.3 The four weights of zinc coatings are: Type 1 and Classes A, B, and C. Minimum weights of zinc coatings are specified in Table 4.

NOTE 1—The values stated in inch-pound units are to be regarded as the standard.

2. Description of Strand

2.1 The designation of the finished strand shall be expressed as the nominal diameter of the strand, the number of the wires in the strand, and the minimum breaking strength of the strand as prescribed in Table 1, and the type or class of coating as prescribed in Table 4.

3. Ordering Information

3.1 Orders for material under this specification shall include the following information:

3.1.1 Quantity of strand in feet,

3.1.2 Nominal strand diameter, number of wires, grade, and minimum breaking strength of strand (Section 7 and Table 1),

3.1.3 Weight (type and class) of zinc-coating (Section 10 and Table 4), and

3.1.4 Length of strand in coils or on reels

(Section 16).

4. Material

4.1 The base metal shall be steel made by the open-hearth, basic-oxygen, or electric-furnace process and of such quality and purity that, when drawn to the size of wire specified and coated with zinc, the finished strand and the individual wires shall be of uniform quality and have the properties and characteristics as prescribed in this specification.

4.2 The slab zinc, when used for the coating, shall be any grade of zinc conforming to ASTM Specification B 6, for Zinc (Slab Zinc).²

5. Stranding

5.1 Unless otherwise specified, strand shall have a left lay. A left lay is defined as a counter-clockwise twist away from the observer. All wires shall be stranded with uniform tension. Stranding shall be sufficiently close to ensure no appreciable reduction in diameter when stressed to 10 percent of the specified strength.

5.2 The 3-wire strand shall consist of three wires concentrically twisted with a uniform pitch of not less than 14 nor more than 20 times the specified nominal diameter of the strand.

5.3 The 7-wire strand shall consist of a center wire with a 6-wire layer concentrically twisted over it with a uniform pitch of not

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² Annual Book of ASTM Standards, Parts 7, 8, and 9.

more than 16 times the specified nominal diameter of the strand.

5.4 The 19-wire strand shall consist of a center wire with a 6-wire layer concentrically twisted over it, having a right lay and a uniform pitch of not more than 16 times the nominal diameter of this 7-wire core. The nominal diameter of this 7-wire core shall be considered to be 3 times the nominal diameter of the wires. A 12-wire outer layer, having a left lay shall be concentrically twisted over the 7-wire core and shall have a uniform pitch of not more than 16 times the specified nominal diameter of the strand.

5.5 The 37-wire strand shall consist of a center wire with a 6-wire layer concentrically twisted over it, having a left lay and a uniform pitch of not more than 16 times the nominal diameter of this 7-wire inner core. The nominal diameter of this 7-wire inner core shall be considered to be 3 times the nominal diameter of the wire. An intermediate layer of 12 wires having a right lay shall be concentrically twisted over this 7-wire core and shall have a uniform pitch of not more than 16 times the nominal diameter of this 19-wire core. The nominal diameter of this 19-wire core shall be considered as 5 times the nominal diameter of the wires. An 18-wire outer layer, having a left lay shall be concentrically twisted over the 19-wire core and shall have a uniform pitch of not more than 16 times the specified nominal diameter of the strand.

5.6 All wires in the strand shall lie naturally in their true positions in the completed strand and, when the strand is cut, the ends shall remain in position or be readily replaced by hand and then remain in position. This may be accomplished by any means or process, such as preforming, post forming or form setting.

6. Joints and Splices

6.1 Electric-welded butt joints made prior to the start of cold drawing of the wire are permitted.

6.2 In 3-wire strand, there shall be no joints made in the individual finished wire. In 7-wire strand, joints made in individual finished wires shall be acceptable provided there is not more than one joint in any 150-ft (45.7-m) section of the completed strand and the

location of each joint is marked on the strand with paint or some other distinguishing mark. Factory joints made in the individual finished wires of 19 and 37-wire strand shall be kept well spaced and at a minimum in number.

6.3 Joints in the wires composing the strand shall be either the brazed-lap type or electric-butt-welded type. When the brazed type of joint is used, the length of the lap shall be not less than three times the diameter of the wire and the overlapping faces shall be smooth, clean, properly fluxed, and completely covered by the brazing metal. When the electric-welded type of joint is used, care shall be taken to prevent injury to the wire during electric-butt welding. All joints shall be well made and shall be coated with zinc after completion so that the joints shall have protection from corrosion equivalent to that of the zinc-coated wire itself.

6.4 There shall be no strand joints or strand splices in any length of the completed strand unless specifically permitted by the purchaser.

7. Breaking Strength and Weight

7.1 The approximate weight per 1000 ft or 305 m, of strand, and the minimum breaking strength of the finished strand shall be as specified in Table 1.

7.2 A test in which the breaking strength is below the minimum specified and which may have been caused by the slipping of the specimen in the jaws of the testing machine, by breaking within the jaws or within 1 in. (25.4 mm) of the jaws, or by the improper socketing of a specimen shall be disregarded and another sample from the same coil or reel shall be tested. Tests shall be made on lengths of strand that do not contain wire joints or splices.

8. Elongation

8.1 The elongation of the strand in 24 in. (610 mm) shall be not less than that specified in Table 2.

8.2 The elongation shall be determined as the percent increase in separation between the jaws of the testing machine from the position after application of the initial load to the position at the initial failure in the test specimen. The separation of the jaws of the testing machine shall be approximately 2 ft