



Standard Specification for Concentric-Lay-Stranded Aluminum-Clad Steel Conductors¹

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1. Scope

1.1 This specification covers bare concentric-lay-stranded conductors made from bare, hard-drawn, round, aluminum-clad steel wires of 20.3 % conductivity for general use of electrical purposes. This specification does not apply to stranded conductors for reinforcement in ACSR conductors.

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 The following documents of the issue in effect on date of material purchase form a part of this specification to the extent referenced herein:

2.2 ASTM Standards:

B 354 Terminology Relating to Uninsulated Metallic Electrical Conductors²

B 415 Specification for Hard-Drawn Aluminum-Clad Steel Wire²

2.3 Other Documents:

C8.1 Definitions and General Standards for Wires and Cables³

NBS Handbook 100—Copper Wire Tables of the National Institute of Standards and Technology⁴

3. Description of Conductor

3.1 The designation of the finished conductor shall be expressed as the number of wires and the diameter of these individual wires, usually expressed as the AWG size of the wires.

4. Ordering Information

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

4.1.1 Quantity of each size,

4.1.2 Conductor size expressed as number and AWG size of individual wires (Section 3 and Table 1),

4.1.3 Direction of lay of outer layer, if other than left-hand (see 6.3),

4.1.4 Package size (see 15.1),

4.1.5 Special package markings if required (see 15.3),

4.1.6 Special lagging if required (see 15.2), and

4.1.7 Place of inspection if other than place of manufacture (Section 13).

5. Joints

5.1 Joints or splices may be made in the finished individual aluminum-clad steel wires composing concentric-lay stranded conductors using more than three wires, provided that such joints or splices have a protection and electrical conductance equivalent to that of the wire itself and that they do not decrease the strength of the finished stranded conductor below the minimum breaking strength shown in Table 1. Such joints or splices shall be not closer than 50 ft (15 m) to any other joint in the same layer in the conductor.

NOTE 1—Joints are made by electrical butt-welding. The ends must be cut and the end of each wire must be straightened for a distance of 12 to 15 in. (300 to 380 mm). The proper sleeve is slipped over the end of one of the wires. The wires are then butt-welded and dressed off to a finished diameter equal to that of the wire. The weld area is then tempered, the sleeve centered over the weld area and compressed to provide a finished joint that is smooth and neat in appearance. This joint has a tensile strength of approximately 90 % of rated breaking strength of the wire, but an allowance is made for this in the rated strength of the conductor as a whole. The completed conductor when containing such joints is required to have the full rated strength.

6. Lay

6.1 For 3-wire conductors, the preferred lay is 16½ times the outside diameter, but the lay shall not be less than 14 times nor more than 20 times this diameter.

6.2 For 7, 19, and 37-wire conductors, the preferred lay is 13½ times the diameter of that layer, but the lay shall not be less than 10 nor more than 16 times this diameter.

6.3 The direction of lay of the outer layer shall be left-hand unless the direction of lay is specified otherwise by the purchaser.

6.4 The direction of lay shall be reversed in consecutive layers.

6.5 All wires in the conductor shall lie naturally in their true

¹ This specification is under the jurisdiction of ASTM Committee B01 on Electrical Conductors and is the direct responsibility of Subcommittee B01.01 on Editorial and Records.

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² Annual Book of ASTM Standards, Vol 02.03.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 3460, Gaithersburg, MD 20899-3460.