



Standard Specification for Compact Round Stranded Aluminum Conductors Using Single Input Wire Construction¹

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1. Scope

1.1 This specification covers aluminum/single input wire (SIW) stranded conductors made from round or shaped wires for use in covered or insulated electrical wires or cables. These conductors shall be composed of one or more roller or die compacted layers of helically applied wires (Explanatory Note 1, Explanatory Note 2, and Explanatory Note 3).

1.2 The values stated in inch-pound or SI units are to be regarded separately as standard. The values in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

1.2.1 For density, resistivity and temperature, the values stated in SI units are to be regarded as standard.

NOTE 1—The aluminum and temper designations conform to ANSI H35.1. Aluminum 1350 and Aluminum-Alloy 8XXX correspond to Unified Numbering System A91350 and A98XXX, in accordance with Practice E 527.

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 230 Specification for Aluminum 1350-H19 Wire for Electrical Purposes²
- B 263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors²
- B 354 Terminology Relating to Uninsulated Metallic Electrical Conductors²
- B 400 Specification for Compact Round Concentric-Lay-Stranded Aluminum 1350 Conductors²
- B 609 Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes²
- B 800 Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes—Annealed and Intermediate Tempers²
- B 801 Specification for Concentric-Lay-Stranded Conduc-

tors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation²

B 830 Specification for Uniform Test Methods and Frequency²

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications³

E 527 Practice for Numbering Metals and Alloys (UNS)⁴

2.3 ANSI Standard:

ANSI H35.1 Alloy and Temper Designation Systems for Aluminum⁵

2.4 NIST Standard:

Handbook 100 —Copper Wire Tables NBS ⁶

3. Classification

3.1 The conductors described in this specification are intended for subsequent insulation or covering. The classification of these conductors is SIW Compact.

4. Ordering Information

4.1 Orders for material in accordance with this specification shall include the following information:

- 4.1.1 Quantity of each size and class (Table 1);
- 4.1.2 Conductor size, circular-mil area or AWG (Section 7);
- 4.1.3 Temper (Section 12);
- 4.1.4 Lay direction, if nonstandard (see 6.2 and 6.3);
- 4.1.5 Special tension test, if required (see 16.2);
- 4.1.6 Place of inspection (Section 17);
- 4.1.7 Packaging and package marking (Section 18), and
- 4.1.8 Material for conductor.

5. Joints

5.1 Joints may be made in any of the wires of any stranding by electric-butt welding, cold-pressure welding, or electric-butt, cold-upset welding.

5.1.1 Joints in the individual wires in a finished conductor shall not be closer together than 1 ft (0.3 m) for conductors of 19 wires or less, or closer than 1 ft (0.3 m) in a layer for conductors of more than 19 wires.

¹ This specification is under the jurisdiction of ASTM Committee B-1 on Electrical Conductors and is the direct responsibility of Subcommittee B01.04 on Conductors of Copper and Copper Alloys.

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² *Annual Book of ASTM Standards*, Vol 02.03.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ *Annual Book of ASTM Standards*, Vol 01.01.

⁵ Available from American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.

⁶ Available from National Institute of Standards and Technology, (NIST), Gaithersburg, MD 20899