



Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation¹

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1. Scope

1.1 This specification covers bare combination unilay-stranded conductors made from round copper wires, either uncoated or coated with tin or lead alloy for insulated conductors for electrical purposes. These conductors shall be constructed with a central core wire surrounded by two layers of helically laid wires, resulting in an outer diameter equal to the compressed-stranded equivalent conductor. (See Explanatory Note 1 and Note 2).

NOTE 1—For the purpose of this specification, combination unilay conductor is defined as follows: a central core wire surrounded by a layer of six helically laid wires of the same diameter as the core wire with a helically laid outer layer containing six smaller wires alternated between six wires of the same diameter as the wires in the layer underneath. Both layers have a common length and direction of lay (see Fig. 1).

1.2 For the purpose of this specification, normal conductor classification (Class AA, A, B, C) is not applicable as these conductors are intended for subsequent insulation. The descriptive term combination unilay-stranded shall be used in place of conductor classification.

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

1.3.1 For conductor sizes designated by AWG or kcmil, the requirements in SI units have been numerically converted from corresponding values, stated or derived, in inch-pound units.

1.3.2 For conductor sizes designated by SI units only, the requirements are stated or derived in SI units.

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

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the*

responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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:²

B1 Specification for Hard-Drawn Copper Wire

B2 Specification for Medium-Hard-Drawn Copper Wire

B3 Specification for Soft or Annealed Copper Wire

B33 Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes

B189 Specification for Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes

B246 Specification for Tinned Hard-Drawn and Medium-Hard-Drawn Copper Wire for Electrical Purposes

B263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors

B354 Terminology Relating to Uninsulated Metallic Electrical Conductors

2.3 Other Standard:³

NBS Handbook 100 Copper Wire Tables of the National Bureau of Standards

3. Ordering Information

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

3.1.1 Quantity of each size,

3.1.2 Conductor Size: Circular-mil area or American Wire Gage, AWG (Section 7 and Table 1),

3.1.3 Stranding (see Explanatory Note 3),

3.1.4 Temper (see 4.2),

3.1.5 Whether coated or uncoated; if coated, designate type of coating (see 4.1 and 4.2),

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

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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 National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.