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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Specification for Compact Round Concentric-Lay-Stranded Copper Conductors[1]

This standard is issued under the fixed designation B 496; 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 bare compact round concentric-lay-stranded conductors made from uncoated round copper wires for general use for electrical purposes. These conductors shall be constructed with a central core surrounded by one or more layers of helically laid compacted wires (Explanatory Note 1 and Note 2).

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.

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 3 Specification for Soft or Annealed Copper Wire[2]

B 263 Test Method for Determination of Cross-Sectional Area of Stranded Conductors[2]

B 354 Terminology Relating to Uninsulated Metallic Electrical Conductors[2]

3. Ordering Information

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

3.1.1 Quantity of each size (Table 1),

3.1.2 Conductor size; circular-mil area or AWG, (Section 6 and Table 1),

3.1.3 Packaging (Section 14), if required,

3.1.4 Special package marking, and

3.1.5 Place of inspection (Section 16).

4. Joints

4.1 Welds and brazes may be made in rods or in wires prior to final drawing.

4.2 Welds and brazes may be made in the individual round drawn wires for compact conductors, but shall not be closer together than 1 ft (300 mm) for conductor of 19 wires or less or closer than 1 ft (300 mm) in a layer for conductor of more than 19 wires.

4.3 No joint nor splice shall be made in a compact-stranded conductor as a whole.

5. Lay

5.1 The length of lay shall be not less than 8 nor more than 16 times the outside diameter of the completed conductor.

5.2 The direction of lay of the outer layer shall be left-hand, and it may be reversed or unidirectional in successive layers.

6. Construction

6.1 The construction of the compact round concentric-lay-stranded conductors shall be as shown in Table 1.

6.2 The starting round copper wires used in the fabrication of the compact round conductor shall be of such diameter as to produce a finished conductor having a nominal cross-sectional area and diameter as prescribed in Table 1.

7. Density

7.1 For the purpose of calculating linear densities, cross sections, etc., the density of the copper shall be taken as 8.89 g/cm ^{3}(0.32117 lb/in.^{3}) at 20°C.

8. Mass and Resistance

8.1 The mass per unit length and d-c electrical resistance of a compact round conductor are greater than the total of these characteristics of the compressed wires composing the finished conductor, depending upon the lay. The standard increment of mass per unit length and electrical resistance shall be taken as 2 %. The nominal mass per unit length and d-c resistance are shown in Table 1. When the d-c resistance is measured at other than 20°C, it shall be corrected by using the multiplying factors given in Table 2.

8.2 In cases where the lay is definitely known, the increment

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