



Designation: B 784 – 00

Standard Specification for Modified Concentric-Lay-Stranded Copper Conductors for Use in Insulated Electrical Cables¹

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1. Scope

1.1 This specification covers bare modified concentric-lay-stranded conductors made from round copper wires, either uncoated or coated with tin, lead, or lead alloy for general use in insulated electrical cables. These conductors shall be constructed with a central core consisting of not more than seven wires, surrounded by one or more layers of helically laid wires.

1.2 For the purposes of this specification, conductors are classified as follows (Explanatory Note 1 and Note 2):

1.2.1 *Class B Modified*—Conductors to be insulated with various materials such as rubber, paper, and crosslink polyethylene.

1.2.2 *Class C Modified and Class D Modified*—Conductors where greater flexibility is required than is provided by Class B Modified conductors.

1.3 The SI values of density and resistivity are to be regarded as standard. For all other properties the inch-pound values are to be regarded as standard and the SI units may be approximate.

NOTE 1—The significant differences in this specification from Specification B 8 are as follows: (1) The central core is permitted to contain up to seven wires drawn into the assembly with an infinite length of lay while Specification B 8 permits only one, and (2) The construction is applicable only to stranded assemblies of 19 or more wires.

2. Referenced Documents

2.1 The following documents of the issue in effect at the 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 Wire²

B 8 Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft²

B 33 Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes²

B 189 Specification for Lead-Coated and Lead-Alloy Coated Soft Copper 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

2.3 *Other Standard:*

NBS Handbook 100³

3. Ordering Information

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

3.1.1 Quantity of each size and class,

3.1.2 Conductor size: circular-mil area or American Wire Gage (AWG) (Section 6),

3.1.3 Class (see 1.2 and Table 1),

3.1.4 Temper (see 10.2),

3.1.5 Whether coated or uncoated; if coated, designate type of coating (see 10.1 and 10.2),

3.1.6 Details of special-purpose lays, if required (see 5.2),

3.1.7 Lagging, if required (see 14.2),

3.1.8 Special package marking, if required (Section 13),

3.1.9 Place of inspection (Section 12), and

4. Joints

4.1 Welds and brazes may be made in rods or in wires prior to final drawing. Welds and brazes may be made in the finished individual wires composing the conductor, but shall not be closer together than prescribed in Table 2.

5. Lay

5.1 The lay of a layer of wires shall be not less than eight nor more than sixteen times the outside diameter of that layer, except that for conductors composed of 37 wires or more, this requirement shall apply only to the two outer layers. The lay of the layers other than the two outer layers shall be at the option of the manufacturer, unless otherwise agreed upon.

5.2 Other lays for special purposes shall be furnished by special agreement between the manufacturer and the purchaser (Explanatory Note 3).

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

5.4 The direction of lay shall be reversed in successive

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 *Annual Book of ASTM Standards*, Vol 02.03.

³ Available from the National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161.