



Standard Specification for Copper-Clad Steel Electrical Conductor for CATV Drop Wire¹

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1. Scope

1.1 This specification covers 21 % conductivity hard-drawn round copper-clad steel wire for coaxial cable center conductors (Note 1).

NOTE 1—Wire ordered to this specification is not intended for redrawing since it is furnished in the hard-drawn temper. If wire is desired for the purpose, the manufacturer should be consulted.

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 the date of material purchase, form a part of this specification to the extent referenced herein.

2.2 ASTM Standards:

B 193 Test Method for Resistivity of Electrical Conductor Materials²

B 258 Specification for Standard Nominal Diameters and Cross-Sectional Areas of AWG Sizes of Solid Round Wires Used as Electrical Conductors²

2.3 NIST Document:

NBS Handbook 100—Copper Wire Tables³

3. Ordering Information

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

3.1.1 Quantity of each size;

3.1.2 Wire size: diameter in inches (see 5.1 and Table 1);

3.1.3 Package size (see 15.1);

3.1.4 Special package marking, if required (Section 15); and

3.1.5 Place of inspection (13.2).

4. Material

4.1 The wire shall be composed of a steel core with a substantially uniform and continuous copper cladding thoroughly bonded to it throughout.

TABLE 1 Properties of Hard-Drawn 21 % Conductivity Copper-Clad Steel Wire

Nominal Diameter, in. ^A	Permissible Variations ^A	Maximum Resistance at 20°C/1000 ft	Minimum Copper Thickness, in. ^A
0.0641	±0.0006 in.	12.228	0.00096
0.0571	±0.0006 in.	15.150	0.00086
0.0508	±0.0005 in.	19.143	0.00076
0.0453	±0.0005 in.	24.096	0.00068
0.0403	±0.0004 in.	30.412	0.00060
0.0320	±0.0003 in.	48.232	0.00048
0.0285	±0.0003 in.	60.825	0.00043

^AMetric equivalents: 1 in. = 25.4 mm (round to four significant figures).

4.2 The finished copper-clad steel wire shall conform to the requirements in this specification.

5. Dimensions and Permissible Variations

5.1 The size shall be expressed as the diameter of the wire in decimal fractions of an inch, using four places of decimals, that is, in tenths of a mil (Note 2).

NOTE 2—The values of wire diameters in Table 1 and Table 2 are given to the nearest 0.0001 in. (0.0025 mm) and correspond to the standard sizes given in Specification B 258. In specifying diameters of wire or inspecting wire, the diameter should also be expressed to the fourth decimal place. An excellent discussion of wire gages and related subjects is contained in NBS Handbook 100.

5.2 Within the range of diameters included in Table 1, the wire shall not vary from the specified diameter by more than ± 1 %, expressed to the nearest 0.0001 in. (0.0025 mm).

5.3 Ten percent, but not less than five reels (or all, if the lot is less than five), from any lot of wire shall be gaged. All reels shall be gaged if any of the selected reels fail to conform to the requirements for diameter.

6. Workmanship, Finish, and Appearance

6.1 The surface of the wire shall be free from imperfections and be consistent with good commercial practice.

7. Tensile and Elongation Properties

7.1 The wire shall conform to a minimum tensile requirement of 120 000 psi (827 MPa) and a minimum elongation requirement of 1.0 %.

7.2 Tension tests shall be made on representative samples. Unless otherwise agreed upon between the manufacturer and the purchaser, the elongation shall be determined by measurements made between the jaws of the testing machine. The zero

¹ This specification is under the jurisdiction of ASTM Committee B-1 on Electrical Conductors and is the direct responsibility of Subcommittee B01.06 on Composite Conductors.

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² Annual Book of ASTM Standards, Vol 02.03.

³ Available from National Institute of Standards and Technology (NIST), Gaithersburg, MD 20899.