



Standard Specification for Standard Metric Sizes of Electrical Conductors¹

This standard is issued under the fixed designation B 682; 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 prescribes the recommended standard metric sizes of solid round electrical conductors.

1.2 This specification prescribes the recommended standard metric size designations of stranded electrical conductors (see Explanatory Note 1).

NOTE 1—Physical properties, construction requirements, and manufacturing tolerances for specific products should be included in individual product specifications developed in accordance with appropriate sizes in this specification.

1.3 The values stated in inch-pound or SI units are to be regarded separately as standard. Each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification. 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. For conductor sizes designated by SI units only, the requirements are stated or derived in SI units.

¹ This specification is under the jurisdiction of ASTM Committee B01 on Wires for Electrical Conductors and is the direct responsibility of Subcommittee B01.02 on Methods of Test and Sampling Procedure.

Current edition approved Mar. 10, 2001. Published May 2001. Originally published as B 682 – 81. Last previous edition B 682 – 81 (1996).

2. Referenced Documents

2.1 ASTM Standards:

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications²

F 205 Test Method for Measuring Diameter of Fine Wire by Weighing³

2.2 IEC Standards:

IEC 182 Basic Dimensions of Winding Wires⁴

IEC 228 Nominal Cross-Sectional Areas and Composition of Conductors of Insulated Cables⁴

2.3 ISO Standards:

ISO R388 Metric Series for Basic Thickness of Sheet and Diameters of Wire⁴

3. Standard Reference Temperature

3.1 For the purpose of this specification, all wire dimensions and properties shall be considered as occurring at the internationally standardized reference temperature of 20°C.

² *Annual Book of ASTM Standards*, Vol 14.02.

³ *Annual Book of ASTM Standards*, Vol 10.04.

⁴ International Electrotechnical Commission and International Organization for Standardization documents are available from the American National Standards Institute (ANSI), 11 West 42nd St., 13th Floor, New York, NY 10036.

TABLE 1 Standard Metric Diameters and Cross-Sectional Areas of Solid Round Wires at 20°C

Diameter			Cross-Sectional Area	
mm (R 20 Series)	in. ^A	mm ²	in. ^{2A}	kcmil ^A
18.0	0.708 7	254.5	0.394 4	502.2
16.0	0.629 9	201.1	0.311 6	396.8
14.0	0.551 8	153.9	0.238 6	303.8
12.5	0.492 1	122.7	0.190 2	242.2
11.2	0.440 9	98.52	0.152 7	194.4
10.0	0.393 7	78.54	0.121 7	155.0
9.00	0.354 3	63.62	0.098 61	125.6
8.00	0.315 0	50.27	0.077 91	99.2
7.10	0.279 5	39.59	0.061 37	78.14
6.30	0.248 0	31.17	0.048 32	61.52
5.60	0.220 5	24.63	0.038 18	48.61
5.00	0.196 9	19.63	0.030 43	38.75
4.50	0.177 2	15.90	0.024 65	31.39
4.00	0.157 5	12.57	0.019 48	24.80
3.55	0.139 8	9.898	0.015 34	19.53