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Standard Specification for Bronze Trolley Wire¹

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^{ε1} NOTE—Designation year date was corrected editorially in April 2017.

1. Scope

1.1 This specification covers round, grooved, and figure-9 deep-section grooved bronze trolley wire.

1.2 The bronze trolley wire may be made in any of the three distinct alloys indicated in accordance with their increasing conductivities: Alloy 40, Alloy 55, Alloy 80.

1.3 The values stated in inch-pound units are to be regarded as the standard. The metric equivalents of inch-pound units given in this standard may be approximate.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Ordering Information

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

- 2.1.1 Quantity of each size, section, and class,
- 2.1.2 Wire size: diameter in in. (see 5.1 and Table 1) or area in circular mils (see 8.1 and Fig. 1 and Fig. 2),
- 2.1.3 Shape of section (see 1.1),
- 2.1.4 Alloy (see 1.2),
- 2.1.5 Package size (see 17.3),
- 2.1.6 Lagging, if required (see 17.1),
- 2.1.7 Relation between vertical axis of grooved wire and axis of reel (see 17.1),
- 2.1.8 Size of arbor hole if other than 4-in. (102 mm) square (see 17.2),
- 2.1.9 Special package marking, if required (see 17.4), and
- 2.1.10 Place of inspection (Section 15).

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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3. Material

3.1 The material shall be bronze of such nature and composition (Explanatory Note 1) as to secure, by proper treatment, the qualities prescribed in this specification for the finished wire.

ROUND WIRE

4. Tensile Properties

4.1 Round wire shall conform to the requirements as to tensile properties prescribed in Table 1.

4.2 Tests on a specimen of round wire containing a joint shall show at least 95 % of the tensile strength specified in Table 1. Elongation tests shall not be made on specimens containing joints.

4.3 Tension tests shall be made on representative samples. The elongation shall be determined as the permanent increase in length, due to the breaking of the wire in tension, measured between gage marks placed originally 10 in. (254 mm) apart upon the test specimen (Explanatory Note 2). The fracture shall be between the gage marks and not closer than 1 in. (25.4 mm) to either gage mark.

5. Dimensions and Permissible Variations

5.1 The size of round trolley wire shall be expressed as the diameter of the wire in decimal fractions of an inch to the nearest 0.1 mil (0.0001 in.) (0.0025 mm).

5.2 Wire shall be truly cylindrical in form. The diameter shall not vary more than ± 1 % from that specified.

6. Twist Test

6.1 For the purpose of determining and developing defects which may be prejudicial to the life of trolley wire, owing to its peculiar service as compared to that of wire for other purposes, round wire shall be subjected to the twist test described in 6.2. Round wire shall not be considered satisfactory if it does not withstand, without breaking, at least the number of twists prescribed in Table 2.

6.2 Three twist tests shall be made on specimens 10 in. (254 mm) in length between the holders of the testing machine. The twisting machine shall be so constructed that there is a linear