Designation: F219 – 96 (Reapproved 2018)

Standard Test Methods of Testing Fine Round and Flat Wire for Electron Devices and Lamps[1]

This standard is issued under the fixed designation F219; 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 These test methods cover the testing of fine wire, flat or round, approximately 0.010 in. (0.25 mm) and smaller in diameter or thickness, used in electronic devices and lamps.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

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. Referenced Documents

2.1 *ASTM Standards:*[2]

B63 Test Method for Resistivity of Metallically Conducting Resistance and Contact Materials

D374 Test Methods for Thickness of Solid Electrical Insulation (Metric) D0374_D0374M

F16 Test Methods for Measuring Diameter or Thickness of Wire and Ribbon for Electronic Devices and Lamps

F205 Test Method for Measuring Diameter of Fine Wire by Weighing

F289 Specification for Molybdenum Wire and Rod for Electronic Applications

3. Test Specimens

3.1 The number of spools per shipment to be checked shall be agreed upon by the producer and consumer. Three test specimens from each spool to be tested shall be taken for the purpose of each of the tests covered by these methods, except Section 4, where one specimen per shipment shall be submitted. These specimens shall be selected sufficiently far from either end of the spool of wire to be free from kinks, bends, and distortion. With the exceptions mentioned in 3.2, the specimens shall be taken from points in the length of the wire separated by at least 1 ft (305 mm).

3.2 For the edgewise curvature test, straightness test, and tension tests the specimens shall be taken from points in the length of the wire separated by at least 3 ft (0.9 m).

4. Chemical Analysis

4.1 In case of disagreement between producer and consumer chemical analysis of the material shall be made in accordance with the methods of the American Society for Testing and Materials for the respective materials when such methods of analysis are available. When ASTM test methods are not available, the analytical procedures shall be agreed upon by the producer and the consumer.

5. Dimensions

5.1 *Procedure A for Round Wire*—Determine the weight-size of round wire in accordance with Test Method F205.

5.2 *Procedure B for Round Wire*—As an alternative method, the diameter of wire over 0.005 in. (0.13 mm) may be determined in accordance with Test Methods D374.

5.3 *Procedure for Flat Wire:*

5.3.1 Determine the dimensions of flat wire in accordance with 5.1 in conjunction with width as measured in accordance with 5.2, or if agreed upon by the manufacturer and the purchaser, any dimension exceeding 0.005 in. may be determined in accordance with 5.2 alone.

5.3.2 In determining the width of flat wire, form a flatwise loop loosely with the ends held between the fingers. The minor axis of the loop shall be ½ to ¾ of the diameter of the micrometer jaws. Measure the width of the ribbon with the curve loop perpendicular to the micrometer jaws. Take care not to distort the ribbon or bend it out of the correct plane during measurement.

[1] These test methods are under the jurisdiction of ASTM Committee F01 on Electronics and are the direct responsibility of Subcommittee F01.03 on Metallic Materials, Wire Bonding, and Flip Chip.

Current edition approved March 1, 2018. Published April 2018. Originally approved in 1947. Last previous edition approved in 2013 as F219 – 96 (2013). DOI: 10.1520/F0219-96R18.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.