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Standard Specification for Electrolytic Capacitor Paper¹

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1. Scope

1.1 The specification covers electrical papers suitable for use as separators in electrolytic capacitors.

1.1.1 These papers are not primary dielectrics as are the kraft capacitor tissues.

1.2 The values stated in inch-pound units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

D 202 Test Methods for Sampling and Testing Untreated Paper Used for Electrical Insulation²

D 1099 Test Method for Water Soluble Sulfates in Paper and Paperboard³

D 1930 Specification for Kraft Dielectric Tissue Capacitor Grade⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

3. Types and Grades

3.1 Electrolytic separator papers are divided into two types, based on the fiber composition:

3.1.1 Kraft wood fibers, and

3.1.2 Long, nonwood cellulose fibers from leaf, stem, or seed-hair sources.

3.2 Within each type, these papers are subdivided into grades, based on apparent density (see Table 1).

4. Basis of Purchase

4.1 Orders for material to this specification shall specify paper, type, grade, thickness, width, and diameter of rolls in accordance with this specification. For example: electrolytic capacitor paper (Type I, Grade 5) 0.002 by 2 in. (0.051 by 51 mm); rolls 6-in. (150-mm) outside diameter by 1 1/8-in. (28-mm) inside diameter core ASTM Specification D 2753.

5. Materials and Manufacture

5.1 This paper shall be made from either unbleached sulfate pulp of coniferous origin or from long, nonwood, unbleached cellulose fibers, of stem leaf or seed-hair origin.

5.2 Very high degrees of physical uniformity and cleanli-

ness are essential to a satisfactory sheet.

6. Chemical Requirements

6.1 The chemical properties of the paper shall conform to the requirements listed in Table 2.

7. Physical Requirements

7.1 The physical properties of the paper shall conform to the requirements prescribed in Table 3 as well as the density requirements prescribed in Table 1.

7.2 The material shall be uniform in thickness, density, and formation. It shall be as free from welts, wrinkles, creases, slime spots, stains, weak spots, tears, cuts, resin, dirt, and metallic particles, as is consistent with good manufacturing processes and in keeping with the requirements of this specification.

8. Condition of Rolls

8.1 The paper shall be supplied in rolls, slit to the ordered width, within the tolerance specified in Table 4.

8.2 Splices in rolls are undesirable but where necessary splices shall be made with an adhesive, such that the spliced area shall meet all requirements of Table 2, except the limits on moisture content. The number of splices permitted shall be agreed upon between the purchaser and the supplier.

8.3 The internal diameter of each core shall at no point be less than the specified nominal value nor shall it exceed that nominal value by more than 1/16 in. (2 mm) or 2 %, whichever is greater.

8.4 Both faces of each roll shall be at a 90° angle to the axis of the core (tolerance + 1 %), and no turn of paper shall extend more than 1/64 in. (0.4 mm) beyond the edge of an adjoining turn nor more than 1/32 in. (1 mm) beyond the principal plane of either face.

8.5 Rolls shall be firmly wound to the specified outer diameter, +0, -1/2 in., and their circumferences shall be free of humps or flat spots.

8.6 The methods of evaluating characteristics listed in 8.4 and 8.5 shall be agreed upon between the purchaser and the seller.

9. Interpretation of Requirements

9.1 For purposes of determining conformance with this specification, an observed or calculated value shall be rounded off, in accordance with the Section on Rounding-Off Method of Practice E 29.

9.2 Unless otherwise stated, all limits in this specification apply to the test determination applicable to a unit sample as defined in Test Methods D 202. Values beyond the stated limits classify the unit as a minor defective unit or as a major

¹ This specification is under the jurisdiction of ASTM Committee D-9 on Electrical Insulating Materials and is the direct responsibility of Subcommittee D09.19 on Dielectric Sheet and Roll Products.

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² Annual Book of ASTM Standards, Vol 10.01.

³ Discontinued; see 1979 Annual Book of ASTM Standards, Part 20.

⁴ Discontinued; see 1986 Annual Book of ASTM Standards, Vol 10.01.

⁵ Annual Book of ASTM Standards, Vol 14.02.