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Standard Specification for Black and Yellow Straight-Cut and Bias-Cut Varnished Cotton Cloth and Tape for Electrical Insulation¹

This standard is issued under the fixed designation D 373; 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 covers black and yellow straight-cut and bias-cut varnished cotton cloth and tape to be used for electrical insulation.

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

2. Referenced Documents

2.1 ASTM Standards:

D 295 Methods of Testing Varnished Cotton Fabrics Used for Electrical Insulation²

D 689 Test Method for Internal Tearing Resistance of Paper³

D 1818 Specification for Continuity of Quality of Electrical Insulating Oil for Low-Pressure Cable Systems⁴

D 2297 Specification for Continuity of Quality of Electrical Insulating Mineral Oil for Capacitors and Cable Accessories⁴

D 3487 Specification for Mineral Insulating Oil Used in Electrical Apparatus⁴

3. Ordering Information

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

3.1.1 Type and color (Section 1),

3.1.2 Desired nominal thickness, width, and length (Section 7),

3.1.3 Type of surface: greasy, dry, or tacky (Section 8),

3.1.4 Type of packing: dry or oil (Section 13),

3.1.5 Number of rolls per package (13.2 and 13.3), and

3.1.6 Marking on package (13.4).

4. Materials and Manufacture

4.1 *Materials*—The cloth and the number of coats of varnish applied shall be such as to produce a product that will conform to the requirements of this specification.

4.2 *Splices*—Splices shall occur no more than once in each roll of 100 yd (90 m) or less, except that rolls having a length of 6 yd (5 m) or less shall contain no splices.

4.3 *Defects*—In general, the varnished cloth and tape shall be free of wrinkles, excessive pebbling, blisters, and other imperfections.

5. Physical Properties

5.1 *Breaking Strength*—The breaking strength requirements shall be in accordance with the values prescribed in Table 1. The average breaking strength shall be based on five readings. If the average value from these five specimens does not conform to the requirements prescribed in Table 1, five additional specimens shall be tested and the average of ten specimens shall conform to these requirements. For full-width rolls, specimens shall be cut between the jointed selvages in the machine direction 1 in. (25.4 mm) wide and tested in the form of a tape. Cut edges of these specimens shall be smooth and straight. In the case of bias-cut material, the breaking strength of the jointed selvages shall be not less than 80 % of the values prescribed in Table 1.

5.2 *Elongation*—The elongation of the material shall be not less than the requirements specified in Table 2 (Note 1). The elongation shall be measured at $23 \pm 1^\circ\text{C}$ ($73.4 \pm 1.8^\circ\text{F}$), and 50 ± 2 % relative humidity on five 1-in. (25.4-mm) wide specimens cut from full-width cloth as described in 5.1, and on one specimen from each of the selected rolls for tape of nominal widths of not less than 0.5 in. (12.7 mm). In the case of tapes, if elongation does not conform to the requirements prescribed in Table 2, tests on two additional specimens from the same sample roll of tape shall be made, and

TABLE 1 Breaking Strength Requirements

Nominal Thickness, mils (mm)	Cut	Breaking Strength, min, lbf/in. (N/mm) of width	
		Black and Yellow	
		Average	Individual
7 (0.18)	bias	34 (5.95)	30 (5.25)
	straight	38 (6.65)	32 (5.60)
10 (0.25)	bias	36 (6.30)	32 (5.60)
	straight	39 (6.82)	34 (5.95)
12 (0.30)	bias	38 (6.65)	34 (5.95)
	straight	40 (7.00)	34 (5.95)

TABLE 2 Elongation Requirements

Nominal Thickness, mils (mm)	Cut	Load, lbf/in. (N/mm) of width	Elongation, min %	
			Black	Yellow
7 (0.18)	bias	10 (1.75)	6.0	4.0
	straight	20 (3.50)	1.5	1.5
10 (0.25)	bias	10 (1.75)	7.5	5.0
	straight	25 (4.38)	1.5	1.5
12 (0.30)	bias	10 (1.75)	7.5	6.0
	straight	25 (4.38)	1.5	1.5

¹ This specification is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D 09.07 on Flexible and Rigid Insulating Materials.

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² Annual Book of ASTM Standards, Vol 10.01.

³ Discontinued—See 1983 Annual Book of ASTM Standards, Vol 15.09.

⁴ Annual Book of ASTM Standards, Vol 10.03.