



Standard Specification for Natural Block Mica and Mica Films Suitable for Use in Fixed Mica-Dielectric Capacitors¹

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1. Scope

1.1 This specification covers natural block mica² and mica films (cut and uncut) suitable for use in the manufacture of fixed mica-dielectric capacitors, based on electrical, visual, and physical properties as determined by tests specified herein.

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

2. Referenced Documents

2.1 ASTM Standards:

D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies³

D 150 Test Methods for A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials³

D 351 Classification for Natural Muscovite Block Mica and Thins Based on Visual Quality³

D 1082 Test Method for Power Factor and Dielectric Constant of Mica³

3. Terminology

3.1 For definitions pertaining to this specification see Classification D 351.

4. Significance and Use

4.1 The properties included in this specification are those required to identify the types of natural block mica and mica films (cut and uncut) suitable for use in the manufacture of fixed mica-dielectric capacitors. There may be other requirements necessary to identify particular characteristics. These will be added to the specification as their inclusion becomes generally desirable, and the necessary test data and methods become available. Natural block mica and mica films that do

not conform to the requirements of this specification for capacitor use may well be capable of meeting the requirements for other critical electrical insulation purposes.

4.2 The system of classifying electrical quality of natural block and mica films (cut and uncut) covered by this specification is based on a combination of electrical and physical properties, and visual qualities specified herein, which the mica must possess. This system differs radically from past practices and previous concepts of mica quality for capacitor use. The electrical classification system does not discriminate against the presence of spots and stains in even first quality electrically selected mica, provided the mica conforms to specific and physical requirements. Appreciable amounts of air inclusions and waviness also are permitted in all electrical quality classes, provided the mica meets specific electrical and physical requirements. Mica meeting these requirements is acceptable without regard to color or origin. However, mica meeting these electrical and physical requirements but having lower visual quality than that meeting the requirements for the visual quality classification is not considered generally as desirable.

4.3 In capacitor fabrication, one or more pieces of cut film or block mica having lower than required electrical and physical properties may prevent meeting the end requirements of the capacitor. It is therefore required that each piece of block (cut) or film (cut or uncut), or both, be tested for the electrical requirements and inspected for the visual requirements listed in this specification.

5. Forms

5.1 This specification covers the following three forms of natural mica, suitable for use in the manufacture of mica-dielectric capacitors:

5.1.1 *Form 1*—Full-knife trimmed natural block mica 0.007 to 0.035 in. (0.18 to 0.89 mm) in thickness.

NOTE 1—A certain percentage of block mica thinner than 0.007 in. may be accepted under this specification, upon agreement between the purchaser and the manufacturer.

5.1.2 *Form 2*—Half-knife trimmed natural block mica 0.007 to 0.035 in. in thickness.

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

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² Coutlee, K. G., "Electrical Quality Classification of Raw Mica by a Rapid, Direct-Reading Test Method," *Proceedings, ASTM*, Vol 46, 1946, p. 1486.

³ *Annual Book of ASTM Standards*, Vol. 10.01.