



Designation: D748 – 18

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

This standard is issued under the fixed designation D748; 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 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 standard.

1.3 *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:*³

D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

D351 Classification for Natural Muscovite Block Mica and Thins Based on Visual Quality

D1082 Test Method for Dissipation Factor and Permittivity (Dielectric Constant) of Mica

3. Terminology

3.1 For definitions pertaining to this specification see Classification **D351**.

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. It is possible that other requirements will be 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. It is possible that natural block mica and mica films that do not conform to the requirements of this specification for capacitor use are 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 will possibly 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.

¹ This specification is under the jurisdiction of ASTM Committee **D09** on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee **D09.01** on Electrical Insulating 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 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.

*A Summary of Changes section appears at the end of this standard