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Manufactured Electrical Mica

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Foreword

This publication represents a revision of the NEMA Standards Publication *Manufactured Electrical Mica*, FI 1-1996.

These standards have been developed and revised over a period of years in close coordination with user needs. Those which deal with the more traditional dry or cured tape type mica products have for the most part remained unchanged. This revision updates several test methods as a result in changes in industry practices and/or the addition of these new product listings.

This document should now contain a majority of the types of constructions of manufactured electrical mica products used and produced by industry today. In some cases, only typical constructions are listed. Alternate constructions and the performance specifications of these products should be a matter of negotiation between buyer and seller.

Metric tables for each of the constructions are included in this document. In most, if not all cases, the English units have been converted to their metric equivalents.

The Flexible Insulation and Mica Section of NEMA reviews these standards periodically for any revisions necessary to keep them up to date. Proposed revisions or comments should be submitted to:

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This Standards Publication was developed by the Flexible Insulation and Mica Section. Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Flexible Insulation and Mica Section was composed of the following members:

Bedford Materials Company, Inc.—Manns Choice, PA
Dennison Manufacturing Company—Framingham, MA
EHV—Weidmann Industries, Inc.—St. Johnsbury, VT
E. I. DuPont de Nemours and Company—Wilmington, DE
Innovative Paper Technologies, LLC—Tilton, NH
Lydall, Inc., Manning Nonwovens Division—Troy, NY
Von Roll Isola, Inc.—Schenectady, NY

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Section 1 GENERAL

1.1 SCOPE

This Standards Publication covers manufacturing, measurement, and testing of manufactured electrical mica.

1.2 DEFINITIONS

Manufactured mica plates are composed of:

- a. binder and mica splittings
- b. binder and mica paper
- c. binder, mica paper, and mica splittings, with no reinforcement, in the form of flat pieces of standard dimensions or in rolls from 4 to 40 in. (102 to 1016 mm) wide.

Manufactured mica sheets are composed of:

- a. binder and mica splittings
- b. binder and mica paper, with reinforcement on one or both sides
- c. an intimately blended aramid and mica paper, in the form of flat pieces of standard dimensions or in rolls

These rolls are typically available in widths from 4 to 40 in. (102 to 1016 mm) wide for types (a.) and (b.), and in widths from 4 to 72 in. (102 to 1828 mm) for type (c.). Rolls wider than 4 in. (102 mm) are commonly referred to as *wrappers*.

The binder and mica papers with reinforcements on one or both sides, come in three styles designated by binder content and primary use application. *Tapes primarily used in VPI applications* have low binder content (5–20%) and are designed in constructions to aid resin absorption in the VPI process. *Dry or cured tapes and sheets* have a medium binder content (20–30%), which has been largely cured and are general purpose products used in most applications. *Resin-rich "B-staged" tapes* are typically high in binder content (30–40%), and have only been partially cured to a non-tacky state. Resin-rich tapes normally need no further addition of resin in their intended use except for cosmetic reasons.

Manufactured mica tapes are composed of:

- a. binder and mica splittings
- b. binder and mica paper, with reinforcement on one or both sides
- c. an intimately blended aramid and mica paper, in the form of rolls up to 4 in. (102 mm) wide and containing not less than 10 linear ft (3048 mm)

There are three broad classes of bonding materials for making mica composites. In this document, organic bonded refers to non-silicone organic resins such as epoxy, polyester, acrylics, etc. Silicone resin binders consist of a molecule which contains both inorganic (silica) and organic constituents. Inorganic binders are rigid molecules containing no organic constituents. They are glass-like compounds.