SLOVENSKI STANDARD
oSIST prEN IEC 60626-1:2022

01-september-2022

Sestavljeni gibki materiali za električno izolacijo - 1. del: Definicije in splošne zahteve

Combined flexible materials for electrical insulation - Part 1: Definitions and general requirements

Flexible Mehrschichtisolierstoffe zur elektrischen Isolierung - Teil 1: Definitionen und allgemeine Anforderungen

Matériaux combinés souples destinés à l\'isolement électrique - Partie 1: Définitions et exigences générales

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COMMITTEE DRAFT FOR VOTE (CDV)

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IEC TC 15 : SOLID ELECTRICAL INSULATING MATERIALS	
SECRETARIAT: United States of America	SECRETARY: Mr John Gauthier
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 112	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Combined flexible materials for electrical insulation - Part 1: Definitions and general requirements

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

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COMBINED FLEXIBLE MATERIALS FOR ELECTRICAL INSULATION

Part 1: Definitions and general requirements

FOREWORD

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IEC 60626-1 has been prepared by MT10: Combined flexible materials, of IEC technical committee 15: Solid electrical insulating materials. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Updating the materials available for use within this series of standards
b) Creating a framework to allow test methods beyond those used for quality control specifications to allow for testing for qualification purposes.

The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This International standard is one of a series which deals with combined flexible materials consisting of two or more different insulating materials laminated together. The components of the combined materials are plastic films and/or fibrous materials such as papers, woven or non-woven fabrics, impregnated or not impregnated. This standard does not include mica papers used as primary component, which are covered by IEC 60371, but insulation materials based on mica may be used as component of a combined flexible material.

This series consist of three parts describing:

Part 1: Definitions and general requirements (IEC 60626-1)

Part 2: Methods of test (IEC 60626-2)

Part 3: Specifications for individual materials (IEC 60626-3)

COMBINED FLEXIBLE MATERIALS FOR ELECTRICAL INSULATION

Part 1: Definitions and general requirements

1 Scope

This document / This part of IEC 60626 contains the definitions related to and the general requirements to be fulfilled by combined flexible materials for electrical insulation. This standard does not include mica papers used as a primary component, which are covered by IEC 60371, but insulation materials based on mica paper may be used as component of a combined flexible material. Materials which conform to this specification meet established levels of performance. However, the selection of material by a user for a specific application should be based on the actual requirements necessary for adequate performance in that application and not based on this specification alone.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

The list of normative references is extensive because, in order to obtain a combination of two or more materials for electrical insulation, it is necessary that those base materials (paper, film, etc) shall conform to the requirements set forth, in the appropriate specification of the base material alone, for that purpose. This rule shall be applied also in the development of new possible combinations; to this end, specifications of materials not actually used, but referenced, may be eligible for future developments.

IEC 60371-3-2:2005, *Insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 2: Mica paper.*

IEC 60371-3-4:1992/AMD1:2006*, Insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 4: Polyester film-backed mica paper with B-stage epoxy resin binder*

IEC 60371-3-5:2005*, Insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 5: Glass-backed mica paper with and epoxy resin binder for post-impregnation (VPI)*

IEC 60371-3-6:1992*, Insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 6: Glass-backed mica paper with B-stage epoxy resin binder*

IEC 60554-1:1977, *Specification for cellulosic papers for electrical purposes – Part 1: Definitions and general requirements.*

IEC 60554-3-1:1979, *Specification for cellulosic papers for electrical purposes – Part 3-1: Specifications for individual materials – General purpose electrical paper.*

IEC 60641-1:2007, *Specification for pressboard and presspaper for electrical purposes – Part 1: Definitions and general requirements.*

IEC 60641-3-2:2007, *Specification for pressboard and presspaper for electrical purposes – Part 3: Specifications for individual materials – Sheet 2: Requirements for presspaper types P.2.1, P4.1, P4.2, P4.3 and P6.1.*

IEC 60674-1:1980, *Specification for plastic films for electrical purposes – Part 1: Definitions and general requirements.*

IEC 60674-3-2:2019, *Specification for plastic films for electrical purposes – Part 3: Specifications for individual materials - Sheet 2: Requirements for balanced biaxially oriented Polyethylene Terephthalate (PET) films used for electrical insulation.*

IEC 60674-3-4:1993, *Specification for plastic films for electrical purposes – Part 3: Specifications for individual materials - Sheet 4: Requirements for Polyimide (PI) films used for electrical insulation.*

IEC 60674-8:2011*, Specification for plastic films for electrical purposes – Part 3: Specifications for individual materials - Sheet 8: Balanced biaxially oriented polyethylene naphthalate (PEN) films used for electrical insulation.*

IEC 60819-1:2009, *Non-cellulosic papers for electrical purposes – Part 1: Definitions and general requirements.*

IEC 60819-3-1:2001, *Specification for non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials- Sheet 1: Filled Glass paper.*

IEC 60819-3-2:2001, *Specification for non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials- Sheet 2: Hybrid inorganic- organic paper.*

IEC 60819-3-3:2011, *Specification for non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials – Sheet 3: Unfilled aramid (aromatic polyamide) papers.*

IEC 60819-3-4:2011, *Specification for non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials – Sheet 4: Aramid fibre paper containing not more than 50% of mica particles.*

ISO 1043-1, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Full width material

material of production width, for example about 1 m, as ordered

3.2 Slit material (tape)

material cut from full width material

3.3 Duplex material

a laminate consisting of two layers of insulating materials

3.4 Triplex material

a laminate consisting of three layers of insulating materials

3.5 Quadruplex material

a laminate consisting of four layers of insulating materials

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4 Designations

4.1 Designation – Product

Particular types of combined flexible insulating materials may be designated by using the relevant combinations of code letters for the form and nature of the main components, separated by a hyphen.

Examples: F – PI,
C – G.

The more commonly used materials are listed in Table 1. Other combinations of combined flexible materials for use as electrical insulation are possible.

Specific characteristics of a particular combined material (duplex or triplex, particular characteristics of the basic material, impregnating material, bonding agent, etc.) are described by additional data following the designation in Table 1.

Example for designation:

P-C/F-PET, is a layer of paper consisting of cellulose, laminated with a film consisting of polyethylene terephthalate.

In some cases, the identification of specific characteristics such as the following may be useful:

Absorbent - porous	Calendered type
Lengthwise oriented	Lengthwise reinforced
Creped	Embossed
Varnished	Impregnated

NOTE This list is for guidance only and is not limiting. Code designations are in accordance with ISO standards.

Detailed specifics regarding commonly used combined flexible materials are provided in IEC 60626-3. For these constructions, the following nomenclature shall be used:

IEC 60626-3, sheet number, layer descriptions, total thickness

For example, from Sheet 112, the following is a description of one such product

IEC 60626-3, Sheet 112, P-C/F-PET/P-C, 0,15 mm

For constructions for which there is no detail provided in IEC 60626-3, the following nomenclature shall be used:

IEC 60626-1, layer descriptions, thickness (micrometers) or grammage (g/m^2) of each layer. For simplicity, the micrometers will be represented by µ and the g/m^2 will be represented by g.

For example, for a combined flexible material using aramid paper and polyethylene naphthalate film in a triplex construction would be listed as:

IEC 60626-1, P-PAa/F-PEN/P-PAa, 50µ/80µ/50µ

For constructions with added functional coatings, the following nomenclature shall be used: