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REDLINE VERSION

# INTERNATIONAL STANDARD



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

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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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 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) the materials available for use within this series of standards have been updated;
- b) a framework has been created 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
15/1009/FDIS	15/1016/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 60626 series, published under the general title *Combined flexible materials for electrical insulation*, can be found on the IEC website.

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## INTRODUCTION

This document 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 document does not include mica papers used as primary component, which are covered by the IEC 60371 series, but insulation materials based on mica can 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 part of IEC 60626 contains the definitions related to and the general requirements to be fulfilled by combined flexible materials for electrical insulation. This document does not include mica papers used as a primary component, which are covered by the IEC 60371 series, but insulation materials based on mica paper ~~may~~ can be used as ~~complementary~~ 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~~ is based on the actual requirements necessary for adequate performance in that application and not based on this specification alone.

#### ~~SAFETY WARNING~~

~~It is the responsibility of the user of the methods contained or referred to in this document to ensure that they are used in a safe manner.~~

### 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.

~~NOTE 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, *Insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 2: Mica paper*

IEC 60371-3-4, *Specification for 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, *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, *Specification for insulating materials based on mica – Part 3: Specifications for individual materials – Sheet 6: Glass-backed mica paper with B-stage epoxy resin binder*

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

IEC 60626-3:~~2008~~, *Combined flexible materials for electrical insulation – Part 3: Specifications for individual materials*

IEC 60641-3-2:2007, *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 60674-3-2:~~1992~~, *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 – Sheets 4: ~~Requirements for polyimide (PI)~~ Polyimide films used for electrical insulation*

IEC 60674-3-8:~~—~~, ~~Specification for~~ *Plastic films for electrical purposes – Part 3: Specifications for individual materials – Sheet 8: ~~Requirements for~~ Balanced biaxially oriented polyethylene naphthalate (PEN) films used for electrical insulation<sup>4</sup>*

IEC 60819-3-1:~~2001~~, *Non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials – Sheet 1: Filled glass paper*

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

IEC 60819-3-3:~~2008~~, *Non-cellulosic papers for electrical purposes – Part 3: Specifications for individual materials – Sheet 3: Unfilled aramid (aromatic polyamide) papers*

IEC 60819-3-4:~~2001~~2011, *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*

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<sup>4</sup>~~—To be published.~~

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

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

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



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IEC 60819-3-4:2011, *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*

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## COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**MATÉRIAUX COMBINÉS SOUPLES DESTINÉS  
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L'IEC 60626-1 a été établie par le comité d'études 15 de l'IEC: Matériaux isolants électriques solides. Il s'agit d'une Norme internationale.

Cette quatrième édition annule et remplace la troisième édition parue en 2009. Cette édition constitue une révision technique.



Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) les matériaux disponibles, destinés à être utilisés dans cette série de normes, ont été mis à jour;
- b) un cadre a été créé, permettant de recourir à des méthodes d'essai en dehors de celles liées aux spécifications du contrôle qualité pour conduire des essais aux fins de la qualification.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
15/1009/FDIS	15/1016/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Le présent document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). Les principaux types de documents développés par l'IEC sont décrits plus en détail sous [www.iec.ch/publications](http://www.iec.ch/publications).

Une liste de toutes les parties de la série IEC 60626, publiées sous le titre général *Matériaux combinés souples destinés à l'isolement électrique*, se trouve sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous [webstore.iec.ch](http://webstore.iec.ch) dans les données relatives au document recherché. À cette date, le document sera

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## INTRODUCTION

Le présent document fait partie d'une série traitant des matériaux combinés souples, composés d'au moins deux matériaux isolants différents, stratifiés. Les constituants des matériaux combinés sont des films de matière plastique et/ou des matériaux fibreux, comme les papiers, les tissés et les non-tissés, imprégnés ou non. Le présent document ne concerne pas les différents types de papiers de mica utilisés en tant que composantes primaires, couverts par la série IEC 60371, mais les isolants à base de mica peuvent être utilisés comme constituants de matériaux combinés souples.

Cette série comprend les trois parties suivantes:

Partie 1: Définitions et exigences générales (IEC 60626-1);

Partie 2: Méthodes d'essai (IEC 60626-2);

Partie 3: Spécifications pour matériaux particuliers (IEC 60626-3).

# MATÉRIAUX COMBINÉS SOUPLES DESTINÉS À L'ISOLEMENT ÉLECTRIQUE –

## Partie 1: Définitions et exigences générales

### 1 Domaine d'application

La présente partie de l'IEC 60626 contient les définitions et les exigences générales applicables aux matériaux combinés souples destinés à l'isolement électrique. Le présent document ne concerne pas les différents types de papiers de mica utilisés en tant que composants primaires, couverts par la série IEC 60371, mais les isolants à base de papier de mica peuvent être utilisés comme constituants de matériaux combinés souples. Les matériaux conformes à cette spécification satisfont aux niveaux de performances établis. Cependant, le choix d'un matériau par un utilisateur et pour une application spécifique est fondé sur les exigences réelles nécessaires pour obtenir des performances satisfaisantes lorsqu'il est utilisé dans cette application, et non fondé sur cette seule spécification.

### 2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60371-3-2, *Matériaux isolants à base de mica – Partie 3: Spécifications pour matériaux particuliers – Feuille 2: Papier de mica*

IEC 60371-3-4, *Spécification pour les matériaux isolants à base de mica – Partie 3: Spécifications pour matériaux particuliers – Feuille 4: Papier de mica renforcé d'un film de polyester avec un agglomérant en résine époxyde à l'état B*

IEC 60371-3-5, *Matériaux isolants à base de mica – Partie 3: Spécifications pour matériaux particuliers – Feuille 5: Papier de mica renforcé de verre avec un agglomérant en résine époxyde pour post-imprégnation (VPI)*

IEC 60371-3-6, *Spécification pour les matériaux isolants à base de mica – Partie 3: Spécifications pour matériaux particuliers – Feuille 6: Papier de mica renforcé de verre avec un agglomérant en résine époxyde à l'état B*

IEC 60554-3-1, *Spécification pour papiers cellulosiques à usages électriques – Partie 3-1: Spécifications pour matériaux particuliers – Papier pour usage électrique général*

IEC 60626-3, *Matériaux combinés souples destinés à l'isolement électrique – Partie 3: Spécifications pour matériaux particuliers*

IEC 60641-3-2:2007, *Carton comprimé et papier comprimé à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 2: Exigences pour papier comprimé, types P.2.1, P.4.1, P.4.2, P.4.3 et P.6.1*

IEC 60674-3-2, *Spécification pour les films en matière plastique à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 2: Exigences pour les films de polyéthylène-téréphtalate (PET), à orientation biaxe équilibrée, utilisés dans l'isolation électrique*

IEC 60674-3-4, *Films plastiques à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 4: Films de polyimide utilisés dans l'isolation électrique*

IEC 60674-3-8, *Films plastiques à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 8: Films de polynaphtalate d'éthylène (PEN), à orientation bi-axiale équilibrée, utilisés dans l'isolation électrique*

IEC 60819-3-1, *Papiers non cellulosiques à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 1: Papier chargé à base de fibres de verre*

IEC 60819-3-2, *Papiers non cellulosiques à usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 2: Papier hybride inorganique-organique*

IEC 60819-3-3, *Papiers non cellulosiques pour usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 3: Papiers en aramide non chargé (polyamide aromatique)*

IEC 60819-3-4:2011, *Papiers non cellulosiques pour usages électriques – Partie 3: Spécifications pour matériaux particuliers – Feuille 4: Papier en fibre aramide ne contenant pas plus de 50 % de particules de mica*