SLOVENSKI STANDARD
oSIST prEN IEC 60674-3-4:2022

01-februar-2022

Plastične folije za električne namene - 3. del: Specifikacije za posamezne materiale - 4. list: Poliimidne folije, ki se uporabljajo za električno izolacijo

Plastic films for electrical purposes - Part 3: Specifications for individual materials - Sheets 4: Polyimide films used for electrical insulation

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

Ta slovenski standard je istoveten z: prEN IEC 60674-3-4:2021

ICS:

29.035.20	Plastični in gumeni izolacijski materiali	Plastics and rubber insulating materials
83.140.10	Filmi in folije	Films and sheets

oSIST prEN IEC 60674-3-4:2022 **en**

15/956/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 60674-3-4 ED2	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2021-12-17	**2022-03-11**
SUPERSEDES DOCUMENTS:	
15/922/CD, 15/930A/CC	

IEC TC 15 : SOLID ELECTRICAL INSULATING MATERIALS

SECRETARIAT:	SECRETARY:
United States of America	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:

Plastic films for electrical purposes - Part 3: Specifications for individual materials - Sheets 4: Polyimide films used for electrical insulation

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PLASTIC FILMS FOR ELECTRICAL PURPOSES –

Part 3: Specification for individual materials
Sheet 4: Polyimide films used for electrical insulation

FOREWORD

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International Standard IEC 60674-3-4 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This Second edition cancels and replaces the first edition published in 1993. This edition constitutes a technical revision.

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

a) this document has been completely revised editorially and technically and included in the IEC 60674 series of standards;
b) new types have been included;
c) the ranges of thickness have been expanded;
d) changes have been made to the requirements of some existing types;

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

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

94

95 Full information on the voting for the approval of this International Standard can be found in the
96 report on voting indicated in the above table.

97 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

101 • reconfirmed,
102 • withdrawn,
103 • replaced by a revised edition, or
104 • amended.

INTRODUCTION

This standard is one of a series which deals with plastic films for electrical purposes. The series will consist of three parts:

Part 1: Definitions and general requirements (IEC 60674-1);

Part 2: Methods of test (IEC 60674-2);

This standard contains one of the sheets comprising part 3, as follows:

Sheet 4: Polyimide films used for electrical insulation

PLASTIC FILMS FOR ELECTRICAL PURPOSES –

Part 3: Specification for individual materials
Sheet 4: Polyimide films used for electrical insulation

1 Scope

This International Standard gives the requirements for polyimide films used for electrical purposes.

Materials which conform to this specification meet established levels of performance. However, the selection of a 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.

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.

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

IEC 60674-2:2016, *Specification for plastic films for electrical purposes – Part 2: Methods of test*

IEC 60757:1983, *Code for designation of colours*

ISO 9773, *Plastics – Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Classification

This standard contains three of the groups comprising part 3 as follows:

Group A: Polyimide films based on poly(N,N'-p,p'-oxidiphenylene pyromellitimide) used for electrical insulation.

For this Group A following types shall be applied:

– Type 1: General purpose
– Type 2a: One side FEP coated (heat sealable)
– Type 2b: Two side FEP coated (heat sealable)
– Type 3a: Dimensionally stabilized (low shrinkage)
– Type 3b: Dimensionally stabilized (low CTE (Coefficient of Thermal Expansion))
– Type 4: Heat shrinkable (withdrawn; formally used in IEC 60674-3-4:1993)
– Type 5: Corona resistant (under consideration)

Group B: Polyimide films based on poly(N,N'-p,phenylenebiphenyl tetracarboxyl imide) used for electrical insulation.

No assigned by type for this Group B

Group C: Polyimide films based on poly(N,N'-p,p-oxidiphenylene biphenyl-tetracarboxylimide) used for electrical insulation.

No assigned by type for this Group C.

5 Designation

The plastic film shall be identified by the following designation:

Designation of the film – IEC 60674-3-4 – PI Group– type – thickness in micrometres– width in millimetres – length in metres – colour.

Example:

Polyimide film – IEC 60674-3-4 – PI Group A – type 1 – 100 – 20 – 200 – nc

(nc = natural colour; other colours according to IEC 60757).

6 General requirements

The material shall be made from polyimide polymer and shall conform to the requirements laid down in IEC 60674-1.

– Group A - Type 1 material shall be a flexible, self-supporting film made from polyimide polymer.
– Group A - Type 2a and Type 2b shall have a heat sealable coating of fluoroethylene-propylene (FEP) resin on one or both sides of type 1 material.
– Group A - Type 3a and Type 3b shall be identical to Group A - type 1 except for dimensional stability with improved low shrinkage and improved low CTE, respectively.
– Group A - type 5 shall be a flexible, self-supporting film made from polyimide polymer using fillers for an upgraded lifetime under presence of corona discharges.

7 Dimensions

7.1 Thickness

The film thickness shall be measured by a roll in accordance with the requirements of Subclause 4.3.2 of IEC 60674-2:2016. The mechanical scanning method (Subclause 4.2.2 of IEC 60674-2:2016) could be used when required.

There are no requirements for thickness in this document, but preferred thicknesses in µm are as follows:

5; 7,5; 10; 12,5; 20; 25; 37,5; 50; 75; 100; 125; 150; 175.

The thickness tolerance shall comply with the requirements in Subclause 4.1 of IEC 60674-1 unless otherwise specified in the purchase contract.

8 Width

The film width shall be measured in accordance with the requirements of Clause 6 of IEC 60674-2:2016.

Preferred widths cannot be given on account of the great variety of applications.

The tolerance on the width shall comply with the requirements on Table 1.

Table 1 – Tolerance on the width

Width mm	Tolerance mm
≤ 50	± 0,5
> 50, ≤ 300	± 1.0
> 300, ≤ 450	± 2.0
> 450, ≤ 1 500	± 4.0
> 1 500	[a]
[a] Specified in the purchase contract	

9 Properties

10 Properties not dependent on thickness

Properties which are not dependent on thickness shall comply with the requirements on Table 2.