

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Pressure-sensitive adhesive tapes for electrical purposes –
Part 3: Specifications for individual materials – Sheet 11: Polyester film
combinations with glass filament, creped cellulosic paper, polyester non-woven,
epoxy and pressure-sensitive adhesive**

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-1212e6c3e104/iec-60454-3-11-2007>

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-1212e6c3e104/iec-60454-3-11-2007>

**Rubans adhésifs sensibles à la pression à usages électriques –
Partie 3: Spécifications pour matériaux particuliers – Feuille 11: Combinaisons
de film polyester avec filament de verre, papier cellulosique crêpé, polyester non
tissé, époxy et adhésif sensible à la pression**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2007 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.

If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Pressure-sensitive adhesive tapes for electrical purposes –
Part 3: Specifications for individual materials – Sheet 11: Polyester film
combinations with glass filament, creped cellulosic paper, polyester non-woven,
epoxy and pressure-sensitive adhesive**

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-121ce5783c-60454-3-11-2007>

**Rubans adhésifs sensibles à la pression à usages électriques –
Partie 3: Spécifications pour matériaux particuliers – Feuille 11: Combinaisons
de film polyester avec filament de verre, papier cellulosique crêpé, polyester
non tissé, époxy et adhésif sensible à la pression**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

N

ICS 29.035.20

ISBN 978-2-83220-339-2

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 Classification and designation.....	7
5 Requirements	8
6 Test methods.....	9
7 Marking, labelling and packaging	9
Table 1 – Requirements for all types and combinations.....	10
Table 2 – Polyester film/glass filament combinations; specific requirements for various types.....	11
Table 3 – Creped cellulosic paper/Polyester film combinations with thermosetting adhesive; specific requirements for various types	12
Table 4 – Polyester film/polyester non-woven combinations with rubber thermosetting adhesive; specific requirements for various types	13
Table 5 – Polyester/epoxy combinations with pressure-sensitive adhesive; specific requirements for various types	14

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PRESSURE-SENSITIVE ADHESIVE TAPES
FOR ELECTRICAL PURPOSES –****Part 3: Specifications for individual materials –
Sheet 11: Polyester film combinations with glass filament,
creped cellulosic paper, polyester non-woven, epoxy and
pressure-sensitive adhesive**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60454-3-11 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition of IEC 60454-3-11 replaces the first edition, published in 1998, as well as replacing IEC 60454-3-15 (2001), IEC 60454-3-16 (2003) and IEC 60454-3-17 (2001). It constitutes a technical revision.

IEC 60454-3-15, IEC60454-3-16 and IEC 60454-3-17 are to be withdrawn at the time of this publication.

The main changes with regard to the previous edition is the consolidation of Parts 3-11, 3-15, 3-16 and 3-17.

This bilingual version (2012-09) corresponds to the monolingual English version, published in 2007-05.

The text of this standard is based on the following documents:

FDIS	Report on voting
15/374/FDIS	15/383/RVD

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

The French version of this standard has not been voted upon.

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>

INTRODUCTION

This International Standard is one of a series which deals with pressure-sensitive adhesive tapes, intended primarily for electrical purposes.

The series consists of three parts:

- Part 1: General requirements (IEC 60454-1);
- Part 2: Methods of test (IEC 60454-2);
- Part 3: Specifications for individual materials (IEC 60454-3).

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

Sheet 11: Polyester film combinations with glass filament, creped cellulosic paper, polyester non-woven, epoxy and pressure-sensitive adhesive.

SAFETY WARNING

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>

PRESSURE-SENSITIVE ADHESIVE TAPES FOR ELECTRICAL PURPOSES –

Part 3: Specifications for individual materials – Sheet 11: Polyester film combinations with glass filament, creped cellulosic paper, polyester non-woven, epoxy and pressure-sensitive adhesive

1 Scope

This sheet of IEC 60454-3 contains the requirements for pressure-sensitive adhesive tapes, made with combined backings based on polyester film:

- PET film/glass filament combination tapes;
- Creped cellulosic paper/PET film combination tapes;
- PET film/polyester non-woven combination tapes;
- PET film/epoxy combination tapes.

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.

2 Normative references

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>

The following referenced documents are indispensable for the application 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 60426:1973, *Test methods for determining electrolytic corrosion with insulating materials.*

IEC 60454-1:1992, *Specifications for pressure-sensitive adhesive tapes for electrical purposes – Part 1: General requirements.*

IEC 60454-2, *Specification for pressure-sensitive adhesive tapes for electrical purposes – Part 2: Methods of test¹*

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*

3 Terms and definitions

For the purposes of this document, refer to the definitions applicable to these materials in IEC 60454-1.

¹ A third edition of IEC 60454-2 is due to be published which will replace the current second edition dated 1998.

4 Classification and designation

The products supplied according to this standard shall be classified as follows:

4.1 Polyester film/glass filament combinations with pressure-sensitive adhesive

- Type 1: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness (0,13 – 0,19) mm and a breaking strength of 280 N/10 mm minimum.
- Type 2: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness (0,18 – 0,25) mm and a breaking strength of 450 N/10 mm minimum.
- Type 3: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with an acrylic crosslinked adhesive, of nominal tape thickness (0,13 – 0,19) mm and a breaking strength of 280 N/10 mm minimum.
- Type 4: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with an acrylic crosslinked adhesive, of nominal tape thickness (0,18 – 0,25) mm and a breaking strength of 450 N/10 mm minimum.
- Type 5: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with an acrylic thermoplastic adhesive, of nominal tape thickness (0,13 – 0,19) mm and a breaking strength of 280 N/10 mm minimum.
- Type 6: Products having properties characteristic of polyester film/glass filament combinations with a temperature index of 130 with an acrylic thermoplastic adhesive, of nominal tape thickness (0,18 – 0,25) mm and a breaking strength of 450 N/10 mm minimum.

The products shall be designated for ordering purposes as follows:

- Type 1: IEC 60454-3-11-1/M/F-PET/G/130/R-Tc
 Type 2: IEC 60454-3-11-2/M/F-PET/G/130/R-Tc
 Type 3: IEC 60454-3-11-3/M/F-PET/G/130/A-Tx
 Type 4: IEC 60454-3-11-4/M/F-PET/G/130/A-Tx
 Type 5: IEC 60454-3-11-5/M/F-PET/G/130/A-Tp
 Type 6: IEC 60454-3-11-6/M/F-PET/G/130/A-Tp

4.2 Creped cellulosic paper/polyester film combinations with thermosetting adhesive

Type 1: Products having properties characteristic of a cellulosic paper/polyester film combination with a temperature index of 120 with a rubber thermosetting adhesive.

The products shall be designated for ordering purposes as follows:

- Type 1: EC 60454-3-11-1/M/P-Cc/F-PET/120/R-Tc.

4.3 Polyester film/polyester non-woven combinations with rubber thermosetting adhesive

Type 1: Products having properties characteristic of a polyester film/polyester non-woven combination with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness 0,090 mm to 0,150 mm.

Type 2: Products having properties characteristic of a polyester film/polyester non-woven combination with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness 0,151 mm to 0,250 mm.

Type 3: Products having properties characteristic of a polyester film/polyester non-woven combination with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness 0,251 mm to 0,500 mm.

The products shall be designated for ordering purposes as follows:

Type 1: IEC 60454-3-11-1/M/F-PET/P-PET/130/R-Tc

Type 2: IEC 60454-3-11-2/M/F-PET/P-PET/130/R-Tc

Type 3: IEC 60454-3-11-3/M/F-PET/P-PET/130/R-Tc

4.4 Polyester/epoxy combinations with pressure-sensitive adhesive

Type 1: Products having properties characteristic of polyester with an epoxy coating with a temperature index of 130 with a rubber thermosetting adhesive, of nominal tape thickness 0,12 mm to 0,16 mm.

Type 2: Products having properties characteristic of polyester with an epoxy coating with a temperature index of 130 with an acrylic cross-linked adhesive, of nominal tape thickness 0,12 mm to 0,16 mm.

Type 3: Products having properties characteristic of polyester with an epoxy coating with a temperature index of 130 with an acrylic cross-linked adhesive, of nominal tape thickness 0,07 mm to 0,11 mm.

The products shall be designated for ordering purposes as follows:

Type 1: IEC 60454-3-11-1/M/EP/PET/130/R-Tc

Type 2: IEC 60454-3-11-2/M/EP/PET/130/A-Tx

Type 3: IEC 60454-3-11-3/M/EP/PET/130/A-Tx

5 Requirements

5.1 All applicable requirements of IEC 60454-1 shall apply to material furnished under this specification.

The PET film used for the polyester film tapes shall be in accordance with IEC 60674-3-2.

5.2 The electrical and other physical properties of products supplied according to this specification shall be within the limits listed in the relevant tables when tested in accordance with the test methods listed therein.

5.3 Thermal endurance

5.3.1 Polyester film/glass filament combinations with pressure-sensitive adhesive

When required by the purchaser, the manufacturer shall provide evidence that the product has a temperature index of not less than 130 when tested in accordance with Clause 21 of IEC 60454-2. The exposure temperatures shall be 150 °C, 160 °C and 180 °C.

The end-point criterion used shall be as follows: the breakdown voltage shall be 2,2 kV for types 1, 2, 3 and 5; and 3,5 kV for types 4 and 6 (metal foil electrode).

5.3.2 Creped cellulosic paper/polyester film combinations with thermosetting adhesive

When required by the purchaser, the manufacturer shall provide evidence that the product has a temperature index of not less than 120 when tested in accordance with Clause 21 of IEC 60454-2. The exposure temperatures shall be 130 °C, 140 °C, and 160 °C.

The end-point criterion used shall be as follows: the breakdown voltage shall be 2,0 kV (metal foil electrode) and the loss of mass less than 15 %.

5.3.3 Polyester film/polyester non-woven combinations with rubber thermosetting adhesive

When required by the purchaser, the manufacturer shall provide evidence that the product has a temperature index of not less than 130 when tested in accordance with Clause 21 of IEC 60454-2. The exposure temperatures shall be 150 °C, 160 °C and 180 °C.

The end-point criterion used shall be as follows: the breakdown voltage shall be 2,0 kV (metal-foil electrode).

5.3.4 Polyester/epoxy combinations with pressure-sensitive adhesive

When required by the purchaser, the manufacturer shall provide evidence that the product has a temperature index of not less than 130 when tested in accordance with Clause 21 of IEC 60454-2. The exposure temperatures shall be 150 °C, 160 °C and 180 °C.

The end-point criterion used shall be as follows: the breakdown voltage shall be 2,7 kV for type 1 and 2; and 2,0 kV for type 3 (metal-foil electrode).

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

6 Test methods

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>

All tests shall be conducted in accordance with the appropriate clauses and subclauses of IEC 60454-2.

7 Marking, labelling and packaging

Unless otherwise specified, all marking, labelling and packaging shall be in accordance with the requirements of IEC 60454-1.

Table 1 – Requirements for all types and combinations

Properties	Clause or subclause of IEC 60454-2	Units	Requirements
Thickness	4	mm	Nominal value per manufacturer $\pm 0,03$ mm or ± 15 %, whichever is greater
Width	5	mm	7.2.1 of IEC 60454-1
Length	6	m	7.3 of IEC 60454-1
Thermal endurance	21		See 5.3.1; 5.3.2; 5.3.3; 5.3.4 according to the type concerned

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[IEC 60454-3-11:2007](https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007)

<https://standards.iteh.ai/catalog/standards/sist/3f1454aa-1836-4235-a42d-182e1c540fa4/iec-60454-3-11-2007>