



**SLOVENSKI STANDARD**  
**SIST EN 60454-2:1998**

**01-junij-1998**

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**Pressure-sensitive adhesive tapes for electrical purposes - Part 2: Methods of test  
(IEC 60454-2:1994)**

Specifications for pressure-sensitive adhesive tapes for electrical purposes -- Part 2:  
Methods of test

Bestimmungen für selbstklebende Isolierbänder für elektrotechnische Anwendungen --  
Teil 2: Prüfverfahren

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Spécifications pour rubans adhésifs sensibles à la pression à usages électriques --  
Partie 2: Méthodes d'essai

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**Ta slovenski standard je istoveten z: EN 60454-2:1995**

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**ICS:**

29.035.01

Izolacijski materiali na  
splošno

Insulating materials in  
general

**SIST EN 60454-2:1998**

**en**

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EUROPEAN STANDARD  
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EUROPÄISCHE NORM

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Descriptors: Solid electrical insulating material, adhesive tapes, test, characteristics

English version

**Specification for pressure-sensitive adhesive  
tapes for electrical purposes  
Part 2: Methods of test  
(IEC 454-2:1994)**

Spécification pour rubans adhésifs  
sensibles à la pression à usages  
électriques  
Partie 2: Méthodes d'essai  
(CEI 454-2:1994)

Bestimmungen für selbstklebende  
Isolierbänder für elektrotechnische  
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Teil 2: Prüfverfahren  
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This European Standard was approved by CENELEC on 1994-12-06. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

### Foreword

The text of document 15C(CO)345, future edition 2 of IEC 454-2, prepared by SC 15C, Specifications, of IEC TC 15, Insulating materials, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60454-2 on 1994-12-06.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1995-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1995-12-01

Annexes designated "normative" are part of the body of the standard.  
In this standard, annexes A and ZA are normative.  
Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 454-2:1994 was approved by CENELEC as a European Standard without any modification.

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## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
216-1	1990	Guide for the determination of thermal endurance properties of electrical insulating materials - Part 1: General guidelines for ageing procedures and evaluation of test results	HD 611.1 S1	1992
216-2	1990	Part 2: Choice of test criteria	HD 611.2 S1	1992
216-3-1	1990	Part 3: Instructions for calculating thermal endurance characteristics Section One: Calculations using mean values of normally distributed complete data	HD 611.3.1 S1	1992
243-1 (mod)	1988	Methods of test for electric strength of solid insulating materials Part 1: Tests at power frequencies	HD 559.1 S1	1991
426	1973	Test methods for determining electrolytic corrosion with insulating materials	-	-
454-3	series	Specifications for pressure-sensitive adhesive tapes for electrical purposes Part 3: Specifications for individual materials	-	-
589	1977	Methods of test for the determination of ionic impurities in electrical insulating materials by extraction with liquids	HD 381 S1	1979

## Other publications:

- ISO 383:1976 - Laboratory glassware - Interchangeable conical ground joints  
ISO 468:1982 - Surface roughness - Parameters, their values and general rules for specifying requirements

Other publications:

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- ISO 683-13:1986 - Heat-treatable steels, alloy steels and free-cutting steels  
Part 13: Wrought stainless steels
- ISO 1184:1983 - Plastics - Determination of tensile properties of films
- ISO 2194:1991 - Industrial screens - Woven wire cloth, perforated plate and  
electroformed sheet - Designation and nominal sizes of openings
- ISO 3071:1980 - Textiles - Determination of pH of the aqueous extract
- ISO 3599:1976 - Vernier callipers reading to 0,1 and 0,05 mm
- ISO/DIS 10093 - Plastics - Fire tests - Standard ignition sources  
(under consideration)

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NORME  
INTERNATIONALE  
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Deuxième édition  
Second edition  
1994-11

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**Spécification pour rubans adhésifs sensibles  
à la pression à usages électriques**

**Partie 2:  
Méthodes d'essai**

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Specification for pressure-sensitive  
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**Part 2:  
Methods of test**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
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Pour prix, voir catalogue en vigueur  
For price, see current catalogue

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

SPECIFICATION FOR PRESSURE-SENSITIVE  
ADHESIVE TAPES FOR  
ELECTRICAL PURPOSES

Part 2: Methods of test

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The 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 the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

International Standard IEC 454-2 has been prepared by sub-committee 15C: Specifications, of IEC technical committee 15: Insulating materials.

This second edition cancels and replaces the first edition published in 1974 and the first supplement (1978) and constitutes a technical revision.

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

DIS	Report on voting
15C(CO)345	15C(CO)365

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

## INTRODUCTION

This part of IEC 454 is one of a series which deals with the characteristics of pressure-sensitive adhesive tapes for electrical purposes.

The series consists of three parts:

Part 1: General requirements (IEC 454-1).

Part 2: Methods of test (IEC 454-2).

Part 3: Specifications for individual materials (IEC 454-3).

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# SPECIFICATION FOR PRESSURE-SENSITIVE ADHESIVE TAPES FOR ELECTRICAL PURPOSES

## Part 2: Methods of test

### 1 Scope

This part of IEC 454 specifies methods of test for pressure-sensitive adhesive tapes for electrical purposes.

### 2 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this part of IEC 454. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 454 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

## iTeh STANDARD PREVIEW

IEC 216-1: 1990, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 1: General guidelines for ageing procedures and evaluation of test results*

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IEC 216-2: 1990, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 2: Choice of test criteria*

IEC 216-3-1: 1990, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 3: Instructions for calculating thermal endurance characteristics – Section 1: Calculation using mean values of normally distributed complete data*

IEC 243-1: 1988, *Methods of test for electric strength of solid insulating materials – Part 1: Tests at power frequencies*

IEC 426: 1973, *Test methods for determining electrolytic corrosion with insulating materials*

IEC 454-3: *Specifications for pressure-sensitive adhesive tapes for electrical purposes – Part 3: Specifications for individual materials*

IEC 589: 1977, *Methods of test for the determination of ionic impurities in electrical insulating materials by extraction with liquids*

ISO 383: 1976, *Laboratory glassware – Interchangeable conical ground joints*

ISO 468: 1982, *Surface roughness – Parameters, their values and general rules for specifying requirements*

ISO 683-13: 1986, *Heat-treatable steels, alloy steels and free-cutting steels – Part 13: Wrought stainless steels*

ISO 1184: 1983, *Plastics – Determination of tensile properties of films*

ISO 2194: 1991, *Industrial screens – Woven wire cloth, perforated plate and electroformed sheet – Designation and nominal sizes of openings*

ISO 3071: 1980, *Textiles – Determination of pH of the aqueous extract*

ISO 3599: 1976, *Vernier callipers reading to 0,1 and 0,05 mm*

ISO/DIS 10093: *Plastics – Fire tests – Standard ignition sources* (under consideration)

### 3 Conditioning and specimen preparation

Unless otherwise specified, rolls are to be conditioned for at least 24 h at  $(23 \pm 2)$  °C and  $(50 \pm 5)$  % relative humidity and all test procedures are to be carried out in this atmosphere.

Remove and discard the three outer turns before taking any test specimens from the conditioned roll. Specimen preparation shall be done with care in a clean environment. Specific specimen preparation details will be included with the appropriate test method.

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Further conditioning of test specimens may be required.

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### 4 Determination of thickness

#### 4.1 Test apparatus

A dead-weight thickness gauge having two ground and concentric circular surfaces, flat within 0,001 mm and parallel to within 0,003 mm. The upper surface shall be 6 mm to 8 mm in diameter and the lower surface larger than the upper one. The upper surface shall move on the axis perpendicular to the two faces.

The gauge shall be graduated to read directly to 0,002 mm. The frame of the thickness gauge shall be of such rigidity that a load of 15 N applied to the gauge housing, out of contact with either the weight or the pressure foot spindle, will produce a deflection of the frame not greater than 0,002 mm (as indicated on the thickness gauge). The pressure exerted on the specimen shall be  $(50 \pm 5)$  kPa.

The accuracy of the thickness gauge shall be checked frequently by means of a set of steel gauges; the measuring errors of the thickness gauge shall not exceed 0,005 mm.

#### 4.2 Test specimens

Five specimens, at least 75 mm long, are cut from the roll at intervals not less than 300 mm. The specimen shall be allowed to relax for at least 5 min.

#### 4.3 Procedure

Place the test specimen between the jaws of the thickness gauge in contact with the fixed foot. Take care to ensure that no air bubbles are trapped. Lower the moving pressure foot gently on to the surface of the tape and take the reading on the gauge within 2 s. Read the measurement to the nearest 0,002 mm on the thickness gauge scale.

#### 4.4 Results

Report the central value as well as the maximum and minimum values of the five readings of thickness in millimetres.

### 5 Determination of width

#### 5.1 Method A

5.1.1 Use a steel rule graduated to 0,5 mm. The total measuring error of the rule shall not exceed 0,1 mm.

5.1.2 A specimen of tape, at least 450 mm long, is removed from the roll and placed adhesive side up on a smooth flat surface. The specimen shall be allowed to relax for at least 5 min.

The width of the relaxed specimen is measured with the adhesive side down to the nearest 0,5 mm using the rule. Ten measurements shall be made, uniformly distributed along the length of the specimen. The width shall be the mean value of the ten measurements.

#### 5.2 Method B

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#### 5.2.1 Principle

The adhesive tape roll is placed between the jaws of a pair of callipers.

The width is the perpendicular distance, expressed in millimetres, between the opposite cut edges of the test specimen of adhesive tape. This method may not be suitable for slit or rewound rolls if the turns are not exactly coincident.

#### 5.2.2 Apparatus

Vernier callipers with a scale length not less than the roll width according to ISO 3599.

#### 5.2.3 Test specimen

One roll of tape.

#### 5.2.4 Conditioning

Conditioning shall conform to clause 3 with the exception that it is not necessary to remove any layers unless damaged.