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Fasta isolermaterial – Temperaturbeständighet – Provning –

Del 2: Bestämning av temperaturbeständighet för elektriska isolermaterial – Val av provningsvillkor

Electrical insulating materials – Thermal endurance properties – Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria

Som svensk standard gäller europastandarden EN 60216-2:2005. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60216-2:2005 med rättelse EN 60216-2:2005/AC:2024-09.

Nationellt förord

Europastandarden EN 60216-2:2005^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60216-2, Fourth edition, 2005^{**) - Electrical insulating materials - Thermal endurance properties - Part 2: Determination of thermal endurance properties of electrical insulating materials - Choice of test criteria}**

utarbetad inom International Electrotechnical Commission, IEC.

^{*)} EN 60216-2:2005 ikraftsattes 2005-11-21 som SS-EN 60216-2, utg 1:2005 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

^{**) Corrigendum 1 (2024-09) till IEC 60216-2:2005 är inarbetat i standarden.}

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English version

**Electrical insulating materials –
Thermal endurance properties
Part 2: Determination of thermal endurance properties
of electrical insulating materials –
Choice of test criteria
(IEC 60216-2:2005)**

Matériaux isolants électriques –
Propriétés d'endurance thermique
Partie 2: Détermination des propriétés
d'endurance thermique de matériaux
isolants électriques –
Choix de critères d'essai
(CEI 60216-2:2005)

Elektroisolierstoffe –
Eigenschaften hinsichtlich des
thermischen Langzeitverhaltens
Teil 2: Leitfaden zur Bestimmung
thermischer Langzeiteigenschaften
von Elektroisolierstoffen –
Auswahl der Prüfmerkmale
(IEC 60216-2:2005)

This European Standard was approved by CENELEC on 2005-08-01. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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 15E/257/FDIS, future edition 4 of IEC 60216-2, prepared by SC 15E*, Methods of test, of IEC TC 15, Insulating materials, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60216-2 on 2005-08-01.

This European Standard supersedes HD 611.2 S1:1992.

The main changes from HD 611.2 S1 are as follows:

- editorial;
- Table 1 has been actualized essentially by Part 3 sheets of IEC/SC 15C publications.

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) | 2006-05-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2008-08-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60216-2:2005 was approved by CENELEC as a European Standard without any modification.

* Subcommittee 15E has been merged with technical committee 98 into the new technical committee 112.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60172	- ¹⁾	Test procedure for the determination of the temperature index of enamelled winding wires	EN 60172	1994 ²⁾
IEC 60216-3	- ¹⁾	Electrical insulating materials - Thermal endurance properties Part 3: Instructions for calculating thermal endurance characteristics	EN 60216-3	2002 ²⁾
IEC 60216-5	- ¹⁾	Part 5: Determination of relative thermal endurance index (RTE) of an insulating material	EN 60216-5	2003 ²⁾
IEC 60216-6	- ¹⁾	Part 6: Determination of thermal endurance indices (TI and RTE) of an insulating material using the fixed time frame method	EN 60216-6	2004 ²⁾
IEC 60243-1	- ¹⁾	Electrical strength of insulating materials - Test methods Part 1: Tests at power frequencies	EN 60243-1	1998 ²⁾
IEC 60317	Series	Specifications for particular types of winding wires	EN 60317	Series
IEC 60370	- ¹⁾	Test procedure for thermal endurance of insulating varnishes - Electric strength method	HD 570 S1	1990 ²⁾
IEC 60371	Series	Specification for insulating materials based on mica	EN 60371	Series
IEC 60394	Series	Varnished fabrics for electrical purposes	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60450	- ¹⁾	Measurement of the average viscometric degree of polymerization of new and aged electrical papers	-	-
IEC 60454	Series	Specifications for pressure-sensitive adhesive tapes for electrical purposes	EN 60454	Series
IEC 60455	Series	Resin based reactive compounds used for electrical insulation	EN 60455	Series
IEC 60464	Series	Varnishes used for electrical insulation	EN 60464	Series
IEC 60554	Series	Specification for cellulosic papers for electrical purposes	-	-
IEC 60626	Series	Combined flexible materials for electrical insulation	EN 60626	Series
IEC 60641	Series	Specification for pressboard and presspaper for electrical purposes	EN 60641	Series
IEC 60667	Series	Specification for vulcanized fibre for electrical purposes	HD 416	Series
IEC 60674	Series	Specification for plastic films for electrical purposes	EN 60674	Series
IEC 60684	Series	Flexible insulating sleeving	EN 60684	Series
IEC 60763	Series	Specification for laminated pressboard	EN 60763	Series
IEC 60819	Series	Specification for non-cellulosic papers for electrical purposes	-	-
IEC 60893	Series	Insulating materials - Industrial rigid laminated sheets based on thermosetting resins for electrical purposes	EN 60893	Series
IEC 61033	- ¹⁾	Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate	-	-
ISO 37	- ¹⁾	Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties	-	-
ISO 178	- ¹⁾	Plastics - Determination of flexural properties	EN ISO 178	2003 ²⁾
ISO 179-1	- ¹⁾	Plastics - Determination of Charpy impact properties Part 1: Non-instrumented impact test	EN ISO 179-1	2000 ²⁾
ISO 527-2	- ¹⁾	Plastics - Determination of tensile properties Part 2: Test conditions for moulding and extrusion plastics	EN ISO 527-2	1993 ²⁾

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 527-3	- ¹⁾	Part 3: Test conditions for films and sheets	EN ISO 527-3	1995 ²⁾
ISO 1520	- ¹⁾	Paints and varnishes - Cupping test	EN ISO 1520	2001 ²⁾
ISO 1924	Series	Paper and board - Determination of tensile properties		-
ISO 2759	- ¹⁾	Board - Determination of bursting strength	EN ISO 2759	2003 ²⁾
ISO 8256	- ¹⁾	Plastics - Determination of tensile-impact strength	EN ISO 8256	2004 ²⁾

English Version

Electrical insulating materials - Thermal endurance properties -
Part 2: Determination of thermal endurance properties of
electrical insulating materials - Choice of test criteria
(IEC 60216-2:2005/COR1:2024)

Matériaux isolants électriques - Propriétés d'endurance
thermique - Partie 2: Détermination des propriétés
d'endurance thermique de matériaux isolants électriques -
Choix de critères d'essai
(IEC 60216-2:2005/COR1:2024)

Elektroisolierstoffe - Eigenschaften hinsichtlich des
thermischen Langzeitverhaltens - Teil 2: Leitfadens zur
Bestimmung thermischer Langzeiteigenschaften von
Elektroisolierstoffen - Auswahl der Prüfmerkmale
(IEC 60216-2:2005/COR1:2024)

This corrigendum becomes effective on 27 September 2024 for incorporation in the English language version of the EN.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Endorsement notice

The text of the corrigendum IEC 60216-2:2005/COR1:2024 was approved by CENELEC as EN 60216-2:2005/AC:2024-09 without any modification.

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60216-2

Quatrième édition
Fourth edition
2005-08

**Matériaux isolants électriques –
Propriétés d'endurance thermique –**

**Partie 2:
Détermination des propriétés d'endurance
thermique de matériaux isolants électriques –
Choix de critères d'essai**

**Electrical insulating materials –
Thermal endurance properties –**

**Part 2:
Determination of thermal endurance
properties of electrical insulating materials –
Choice of test criteria**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL INSULATING MATERIALS –
THERMAL ENDURANCE PROPERTIES –****Part 2: Determination of thermal endurance
properties of electrical insulating materials –
Choice of test criteria**

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.
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International Standard IEC 60216-2 has been prepared by subcommittee 15E¹: Methods of test, of IEC technical committee 15: Insulating materials.

This fourth edition of IEC 60216-2 cancels and replaces the third edition issued in 1990, and constitutes a technical revision.

The main changes from the previous edition are as follows:

- editorial,
- Table 1 has been actualized essentially by Part 3 sheets of SC 15C publications.

¹ Subcommittee 15E has been merged with technical committee 98 into the new technical committee 112.

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

FDIS	Report on voting
15E/257/FDIS	15E/259/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.

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

IEC 60216: *Electrical insulating materials – Properties of thermal endurance*, consists of six parts:

- Part 1: Ageing procedures and evaluation of test results
- Part 2: Choice of test criteria
- Part 3: Instructions for calculating thermal endurance characteristics
- Part 4-1: Ageing ovens – Section 1: Single-chamber ovens
- Part 4-2: Ageing ovens – Precision ovens for use up to 300 °C
- Part 4-3: Ageing ovens – Multi-chamber ovens
- Part 5: Determination of relative thermal endurance index (RTE) of an insulating material
- Part 6: Determination of thermal endurance indices (TI and RTE) of an insulating material using the fixed time frame method

NOTE This work may be continued. For revisions and new parts, see the current catalogue of IEC publications for an up-to-date list.

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.

The content of the corrigendum 1 (2024-09) has been included in this copy.

ELECTRICAL INSULATING MATERIALS – THERMAL ENDURANCE PROPERTIES –

Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria

1 Scope

This part of IEC 60216 gives guidance for the choice of test criteria for the determination of thermal endurance characteristics. It includes a list of existing published procedures which is however not exhaustive.

2 Normative references

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 60172, *Test procedure for the determination of the temperature index of enamelled winding wires*

IEC 60216-3, *Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics*

IEC 60216-5, *Electrical insulating materials – Thermal endurance properties – Part 5: Determination of relative thermal endurance index (RTE) of an insulating material*

IEC 60216-6, *Electrical insulating materials – Thermal endurance properties – Part 6: Determination of thermal endurance indices (TI and RTE) of an insulating material using the fixed time frame method*

IEC 60243-1, *Electrical strength of insulating materials – Test methods – Part 1: Tests at power frequencies*

IEC 60317 (all parts), *Specifications for particular types of winding wires*

IEC 60370, *Test procedure for thermal endurance of insulating varnishes – Electric strength method*

IEC 60371 (all parts), *Specification for insulating materials based on mica*

IEC 60394 (all parts), *Varnished fabrics for electrical purposes*

IEC 60450, *Measurement of the average viscometric degree of polymerization of new and aged cellulosic electrically insulating materials*

IEC 60454 (all parts), *Specifications for pressure-sensitive adhesive tapes for electrical purposes*

IEC 60455 (all parts), *Resin based reactive compounds used for electrical insulation*

IEC 60464 (all parts), *Varnishes used for electrical insulation*

IEC 60554 (all parts), *Specification for cellulosic papers for electrical purposes*

IEC 60626 (all parts), *Combined flexible materials for electrical insulation*

IEC 60641 (all parts), *Specification for pressboard and presspaper for electrical purposes*

IEC 60667 (all parts), *Specification for vulcanized fibre for electrical purposes*

IEC 60674 (all parts), *Specification for plastic films for electrical purposes*

IEC 60684 (all parts), *Flexible insulating sleeving*

IEC 60763 (all parts), *Specification for laminated pressboard*

IEC 60819 (all parts), *Non-cellulosic papers for electrical purposes*

IEC 60893 (all parts), *Insulating materials – Industrial rigid laminated sheets based on thermosetting resins for electrical purposes*

IEC 61033, *Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate*

ISO 37, *Rubber, vulcanized or thermoplastic – Determination of tensile stress-strain properties*

ISO 178, *Plastics – Determination of flexural properties*

ISO 179-1, *Plastics – Determination of Charpy impact properties – Non-instrumented impact test*

ISO 527-2, *Plastics – Determination of tensile properties – Test conditions for moulding and extrusion plastics*

ISO 527-3, *Plastics – Determination of tensile properties – Test conditions for films and sheets*

ISO 1520, *Paints and varnishes – Cupping test*

ISO 1924 (all parts), *Paper and board – Determination of tensile properties*

ISO 2759, *Board – Determination of bursting strength*

ISO 8256, *Plastics – Determination of tensile-impact strength*