SVENSK STANDARD SS-EN IEC 62631-2-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2018-11-14	1	1 (1+24)	SEK TK 15/112

Fasta isolermaterial – Dielektriska och resistiva egenskaper – Del 2-1: Permittivitetstal och förlustfaktor – Tekniska frekvenser (0,1 Hz - 10 MHz) – Växelströmsmetoder

Dielectric and resistive properties of solid insulating materials – Part 2-1: Relative permittivity and dissipation factor – Technical Frequencies (0,1 Hz - 10 MHz) – AC Methods

Som svensk standard gäller europastandarden EN IEC 62631-2-1:2018. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62631-2-1:2018.

Nationellt förord

Europastandarden EN IEC 62631-2-1:2018

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 62631-2-1, First edition, 2018 - Dielectric and resistive properties of solid insulating materials - Part 2-1: Relative permittivity and dissipation factor - Technical Frequencies (0,1 Hz - 10 MHz) - AC Methods**

utarbetad inom International Electrotechnical Commission, IEC.

EN från CENELEC som är identiska med motsvarande IEC-standarder och som görs tillgängliga för nationalkommittéerna efter den 1 januari 2018 får en beteckning som inleds med EN IEC istället för som tidigare bara EN.

ICS 17.220.99; 29.035.01

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62631-2-1

April 2018

ICS 17.220.99; 29.035.01

English Version

Dielectric and resistive properties of solid insulating materials - Part 2-1: Relative permittivity and dissipation factor - Technical frequencies (0,1 Hz to 10 MHz) - AC Methods (IEC 62631-2-1:2018)

Propriétés diélectriques et résistives des matériaux isolants solides - Partie 2-1: Permittivité relative et facteur de dissipation - Fréquences techniques (0,1 Hz à 10 MHz) - Méthodes en courant alternatif
(IEC 62631-2-1:2018)

Dielektrische und resistive Eigenschaften fester Elektroisolierstoffe Teil 2-1: Dielektrizitätszahl und der Verlustfaktor Technische Frequenzen (0,1 Hz - 10 MHz) - Wechselspannungsverfahren
(IEC 62631-2-1:2018)

This European Standard was approved by CENELEC on 2018-04-03. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

Ref. No. EN IEC 62631-2-1:2018 E

European foreword

The text of document 112/412/FDIS, future edition 1 of IEC 62631-2-1, prepared by IEC/TC 112 "Evaluation and qualification of electrical insulating materials and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62631-2-1:2018.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2019-01-03
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-04-03

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62631-2-1:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60216-1	NOTE	Harmonized as EN 60216-1.
IEC 60216-4-1:2006	NOTE	Harmonized as EN 60216-4-1:2006 (not modified).
IEC 60247	NOTE	Harmonized as EN 60247.
IEC 60505	NOTE	Harmonized as EN 60505.
IEC 62631-1	NOTE	Harmonized as EN 62631-1.
IEC 60455 series	NOTE	Harmonized as EN 60455 series.
IEC 60464 series	NOTE	Harmonized as EN 60464 series.
IEC 61212 series	NOTE	Harmonized as EN 61212 series.
ISO 291	NOTE	Harmonized as EN ISO 291.
ISO 294-1	NOTE	Harmonized as EN ISO 294-1.
ISO 294-3	NOTE	Harmonized as EN ISO 294-3.
ISO 295	NOTE	Harmonized as EN ISO 295.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60212	-	Standard conditions for use prior to and during the testing of solid electrical insulating materials	EN 60212	-
ISO 4593	-	Plastics - Film and sheeting - Determination of thickness by mechanical scanning	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DIELECTRIC AND RESISTIVE PROPERTIES OF SOLID INSULATING MATERIALS –

Part 2-1: Relative permittivity and dissipation factor – Technical frequencies (0,1 Hz to 10 MHz) – AC methods

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 62631-2-1 has been prepared by IEC technical committee 112: Evaluation and qualification of electrical insulating materials and systems.

This first edition cancels and replaces the first edition IEC 60250, published in 1969. This edition constitutes a technical revision.

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

a) technical frequencies confined to AC methods;
b) update on measurements on solid dielectric materials.

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

FDIS	Report on voting
112/412/FDIS	112/417/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.

A list of all parts in the IEC 62631 series, published under the general title *Dielectric and resistive properties of solid insulating materials*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Tan δ, also called loss tangent, or dissipation factor is a basic parameter for the quality of insulating materials. The measurement of capacitance and loss angle is a classical method well established in the industry over 100 years.

The dissipation factor (tan δ) is dependent on several parameters, such as electrode design, material characteristics, environmental issues, moisture, temperature, voltage applied, and highly dependent on frequencies, the accuracy of measuring apparatus and other parameters applied to the measured specimen.

The frequency range is limited, depending on the test cell and electrode design, the dimension of the samples and connection leads. In this standard the parameters for the frequencies applied are therefore limited in the range of very low frequency (VLF) from less than 1 Hz and up to 10 MHz. However, measuring instruments can provide a broader frequency range, whereby the usable and suitable frequency range is limited by the whole test setup.

DIELECTRIC AND RESISTIVE PROPERTIES OF SOLID INSULATING MATERIALS –

Part 2-1: Relative permittivity and dissipation factor – Technical frequencies (0,1 Hz to 10 MHz) – AC methods

1 Scope

This part of IEC 62631 describes test methods for the determination of permittivity and dissipation factor properties of solid insulating materials (AC methods from 0,1 Hz up to 10 MHz).

NOTE This part of the standard mainly considers measuring setups with guard-electrodes.

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 60212, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

ISO 4593, *Plastics – Film and sheeting – Determination of thickness by mechanical scanning*