IEC 62631-2-2

Edition 1.0 2022-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Dielectric and resistive properties of solid insulating materials – Part 2-2: Relative permittivity and dissipation factor – High frequencies (1 MHz to 300 MHz) – AC methods

Propriétés diélectriques et résistives des matériaux isolants solides – Partie 2-2: Permittivité relative et facteur de dissipation – Hautes fréquences (1 MHz à 300 MHz) – Méthodes en courant alternatif

IEC 62631-2-2:2022-04(en-fr)

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FOREWORD

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

Draft	Report on voting
112/562/FDIS	112/565/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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- withdrawn,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

INTRODUCTION

Permittivity and dissipation factor (tan δ) are basic parameters for the quality of insulating materials. The dissipation factor depends on several parameters, such as environmental factors, moisture, temperature, applied voltage, and highly depends on frequency, the accuracy of measuring apparatus and other parameters applied to the measured specimen.

The frequency range measurable for permittivity and dissipation factor is highly limited by the design of the electrode system, dimension of the sample and impedance of the wiring lead. Special consideration should be given to the measurement in the high frequency range. This document focuses on the method for measurements of permittivity and dissipation factor in the high frequency range from 1 MHz to 300 MHz.

DIELECTRIC AND RESISTIVE PROPERTIES OF SOLID INSULATING MATERIALS –

Part 2-2: Relative permittivity and dissipation factor – High frequencies (1 MHz to 300 MHz) – AC methods

1 Scope

This part of IEC 62631 specifies test methods for the determination of permittivity and dissipation factor properties of solid insulating materials in a high frequency range from 1 MHz to 300 MHz.

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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1
solid electrical insulating material
solid with negligibly low electric conductivity, used to separate conducting parts at different electrical potentials

Note 1 to entry: The term "electrical insulating material" is sometimes used in a broader sense to designate also insulating liquids and gases. Insulating liquids are covered by IEC 60247 [1].

3.2
dielectric properties
comprehensive behaviour of an insulating material measured with an alternating current comprising the capacitance, absolute permittivity, relative permittivity, relative complex permittivity, dielectric dissipation factor

3.3
absolute permittivity
ε
electric flux density divided by the electric field strength