

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**



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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Methods of test.....	8
4.1 Basic theory.....	8
4.2 Distinctive factors for the measurement in high frequency range.....	12
4.3 Power supply	13
4.4 Equipment	13
4.4.1 Accuracy	13
4.4.2 Distinctive feature of equipment for measurement in high frequency range.....	14
4.4.3 Choice of measurement methods.....	15
4.5 Calibration	16
4.6 Test specimen	16
4.6.1 General	16
4.6.2 Recommended dimensions of test specimen and electrode arrangements	16
4.6.3 Number of test specimens	16
4.6.4 Conditioning and pre-treatment of test specimen	16
4.7 Procedures for specific materials	17
5 Test procedure	17
5.1 General.....	17
5.2 Calculation of permittivity and relative permittivity.....	17
5.2.1 Relative permittivity	17
5.2.2 Dielectric dissipation factor $\tan \delta$	17
6 Report	17
7 Repeatability and reproducibility.....	18
Annex A (informative) Compensation method using a series circuit.....	19
Annex B (informative) Parallel electrodes with shield ring	20
Annex C (informative) Apparatus	21
C.1 Parallel T network bridge	21
C.2 Resonance method	22
C.3 I-V method designed for high frequencies	24
C.4 Auto-balancing bridge method.....	24
Annex D (informative) Non-contacting electrode method with micrometer-controlled parallel electrodes in air.....	26
Bibliography.....	28
Figure 1 – Dielectric dissipation factor	10
Figure 2 – Equivalent circuit diagrams with capacitive test specimen	11
Figure 3 – Equivalent parallel circuit for test fixture with sample and leads to equipment.....	12
Figure 4 – Existence of residual impedance and stray capacitance in directly connected system.....	15

Figure A.1 – Compensation method using a series circuit	19
Figure B.1 – Configuration of parallel electrode with shield ring	20
Figure C.1 – Parallel T network, principal circuit diagram	21
Figure C.2 – Parallel T network, practical circuit diagram	21
Figure C.3 – Principle of resonance method, circuit diagram (originally from Q meter)	23
Figure C.4 – Auto-balancing circuit	25
Figure D.1 – Non-contacting electrode method	27
Table 1 – Applicable frequency range in effective apparatus	16

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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**
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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,
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- amended.

INTRODUCTION

Permittivity and dissipation factor ($\tan \delta$) 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