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Edition 1.0 2016-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Dielectric and resistive properties of solid insulating materials – Part 3-1: Determination of resistive properties (DC methods) – Volume resistance and volume resistivity – General method

Propriétés diélectriques et résistives des matériaux isolants solides – Partie 3-1: Détermination des propriétés résistives (méthodes en courant continu) – Résistance transversale et résistivité transversale – Méthode générale

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DIELECTRIC AND RESISTIVE PROPERTIES OF SOLID INSULATING MATERIALS –

Part 3-1: Determination of resistive properties (DC methods) – Volume resistance and volume resistivity – General method

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International Standard IEC 62631-3-1 has been prepared by IEC technical committee TC 112: Evaluation and qualification of electrical insulating materials and systems.

This first edition of IEC 62631-3-1 cancels and replaces the second edition of IEC 60093, published in 1980. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the second edition of IEC 60093:

a) IEC 60093 has been completely revised, both editorially and technically, and incorporated into the new IEC 62631 series;
b) test methods have been updated to current day state of the art;
c) volume and surface resistance and resistivity are now separated to appear in this part of IEC 62631 and in IEC 62631-3-2, respectively.

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

FDIS	Report on voting
112/339/FDIS	112/350/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- withdrawn,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.

DIELECTRIC AND RESISTIVE PROPERTIES OF SOLID INSULATING MATERIALS –

Part 3-1: Determination of resistive properties (DC methods) – Volume resistance and volume resistivity – General method

1 Scope

This part of IEC 62631 covers a method of test for the determination of volume resistance and volume resistivity of electrical insulation materials by applying a DC voltage.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

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

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

IEC 61212 (all parts), *Industrial materials – Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes*

ISO 868, *Plastics and ebonite – Determination of indentation hardness by means of a durometer (Shore hardness)*

3 Terms and definitions

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

3.1
volume resistance
part of the insulation resistance which is due to conduction through the volume

Note 1 to entry: Volume resistance is expressed in the unit of Ω.

3.2
volume resistivity
volume resistance of a material related to its volume

Note 1 to entry: Volume resistivity is expressed in the unit of Ωm.

Note 2 to entry: For insulating materials, the volume resistivity is usually determined by means of measuring electrodes arranged on a sheet of the material.

Note 3 to entry: According to IEC 60050-121: Electromagnetism, “conductivity” is defined as “scalar or tensor quantity, the product of which by the electric field strength in a medium is equal to the electric current density” and “resistivity” as “the inverse of the conductivity when this inverse exists”. Measured in this way, the volume