

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Magnetic materials –  
Part 11: Methods of measurement of the surface insulation resistance of  
electrical steel strip and sheet**

**Matériaux magnétiques –  
Partie 11: Méthodes de mesurage de la résistance d'isolement superficiel des  
bandes et tôles en acier électrique**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**MAGNETIC MATERIALS –****Part 11: Methods of measurement of the surface  
insulation resistance of electrical steel strip and sheet****FOREWORD**

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IEC 60404-11 has been prepared by IEC technical committee 68: Magnetic alloys and steels. It is an International Standard.

This second edition cancels and replaces the first edition published in 1991, Amendment 1:1998 and Amendment 2:2012. This edition constitutes a technical revision.

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

- a) Method B has been deleted and the measurement of individual currents through each contact button is enabled by Method A;
- b) an improved arrangement of the test apparatus and the voltage stabilizing circuit for Method A, "Arrangement B", is introduced.
- c) an alternative layout using two pairs of contact assemblies in opposing position of the test specimen is introduced;

- d) the restriction: “The same area of the test specimen shall not be used to test both sides.” has been deleted.

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

CDV	Report on voting
68/665/CDV	68/681/RVC

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 60404 series, published under the general title *Magnetic 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](http://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.

## MAGNETIC MATERIALS –

### Part 11: Methods of measurement of the surface insulation resistance of electrical steel strip and sheet

#### 1 Scope

This part of IEC 60404 is applicable to electrical steel strip and sheet insulated by coating on one or both sides.

The object of this document is to define the general principles and technical details of the measurement of the surface insulation resistance of electrical steel strip and sheet.

NOTE This test is suitable for manufacturing and quality control in the application of insulation coatings.

#### 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.

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

#### 3 Terms and definitions

No terms and definitions are listed in this document.

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

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

#### 4 Principle of measurement

The principle of the measurement is based on, and includes, the method originally described by Franklin [1]<sup>1</sup> which characterizes one coated surface at a time.

The fundamental arrangement of the test apparatus is shown in Figure 1. Ten metallic contact buttons of fixed area are applied to one coated surface of the test specimen, under specified conditions of voltage and pressure.

The effectiveness of the surface insulation is assessed by the measurement of currents flowing through the 10 contact buttons.

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<sup>1</sup> Numbers in square brackets refer to the Bibliography.