

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Test procedure for the determination of the temperature index of enamelled and tape wrapped winding wires**

**Méthode d'essai pour la détermination de l'indice de température des fils de bobinage émaillés et enveloppés de ruban**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TEST PROCEDURE FOR THE DETERMINATION OF THE TEMPERATURE INDEX OF ENAMELLED AND TAPE WRAPPED WINDING WIRES**

## FOREWORD

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International Standard IEC 60172 has been prepared by IEC Technical Committee 55: Winding wires.

This fourth edition cancels and replaces the third edition published in 1987, Amendment 1:1997 and Amendment 2:2010. This edition constitutes a technical revision.

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

- Revision of Clause 1, Scope, to incorporate appropriate text from former Clause 2, Object;
- Deletion of Clause 2, Object, by placement of its text into existing clauses;
- New Clause 2, Normative references;
- Revision of 5.1.1, 5.3 and 5.4 with corrections to Amendment 2 to the third edition;
- Revision of Clause 7 as to clarify which specimens comply with Table 3 and Table 4;
- Revision of figures with high-resolution photos and graphs.

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

|              |                  |
|--------------|------------------|
| FDIS         | Report on voting |
| 55/1518/FDIS | 55/1524/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.

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,
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- amended.

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# TEST PROCEDURE FOR THE DETERMINATION OF THE TEMPERATURE INDEX OF ENAMELLED AND TAPE WRAPPED WINDING WIRES

## 1 Scope

This International Standard specifies, in accordance with the provisions of IEC 60216-1, a method for evaluating the temperature index of enamelled wire, varnished or unvarnished with an impregnating agent, and of tape wrapped round and rectangular wire, in air at atmospheric pressure by periodically monitoring changes in response to AC proof voltage test. This procedure does not apply to fibre-insulated wire or wire covered with tapes containing inorganic fibres.

NOTE The data obtained according to this test procedure provide the designer and development engineer with information for the selection of winding wire for further evaluation of insulation systems and equipment tests.

## 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 60216-1, *Electrical insulating materials – Thermal endurance properties – Part 1: Ageing procedures and evaluation of test results*

IEC 60216-3, *Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics*

## 3 Terms and definitions

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

### 3.1 temperature index

#### TI

numerical value of the Celsius temperature expressed in degrees Celsius characterizing the thermal capability of an insulating material or an insulation system

Note 1 to entry: In case of insulating materials, the temperature index is derived from the thermal endurance relationship at a given time, normally 20 000 hours. It may be used as basis for determination of the material's temperature class.

Note 2 to entry: In case of insulation systems, the temperature index may be derived from known service experience or from a known comparative functional evaluation of an evaluated and established reference insulation system as basis.

[SOURCE: IEC 60050-212:2010, 212-12-11]

### 3.2 specimen failure time

number of hours at the exposure temperature that have elapsed at the time a specimen fails the proof test