IEC 60851-5

Edition 4.2 2019-09

CONSOLIDATED VERSION

VERSION CONSOLIDÉE

colour inside

Winding wires – Test methods – Part 5: Electrical properties

Fils de bobinage – Méthodes d'essai – Partie 5: Propriétés électriques

IEC 60851-5:2008-07+AMD1:2011-06+AMD2:2019-09 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WINDING WIRES – TEST METHODS –

Part 5: Electrical properties

FOREWORD

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This Consolidated version of IEC 60851-5 bears the edition number 4.2. It consists of the fourth edition (2008-07) [documents 55/1069/FDIS and 55/1078/RVD], its amendment 1 (2011-06) [documents 55/1223/FDIS and 55/1251/RVD] and its amendment 2 (2019-09) [documents 55/1791/FDIS and 55/1818/RVD]. The technical content is identical to the base edition and its amendments.

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60851-5 has been prepared by IEC technical committee 55: Winding wires.

Significant revisions to the previous edition include the following points:

- in Subclause 5.3, the addition of the use of carbon brush electrodes for the counting discontinuities during the high voltage continuity test, as an alternative to the V-groove pulley electrode;
- clarifications in the breakdown voltage test for round wires larger than 2,500 mm and for fibrous covered wires.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 60851 series, under the general title *Winding wires – Test methods*, can be found on the website.

The amendment 1 includes

- in Clause 4 the addition of dielectric breakdown requirements for fully insulated (FIW) zero-defect enamelled round copper wires;
- in Clause 5 the addition of continuity requirements for fully insulated (FIW) zero-defect enamelled round copper wires.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 60851 forms an element of a series of standards which deals with insulated wires used for windings in electrical equipment. The series has three groups describing

a) winding wires – Test methods (IEC 60851);

b) specifications for particular types of winding wires (IEC 60317);

c) packaging of winding wires (IEC 60264).

WINDING WIRES – TEST METHODS –

Part 5: Electrical properties

1 Scope

This part of IEC 60851 specifies the following tests:

– Test 5: Electrical resistance;
– Test 13: Breakdown voltage;
– Test 14: Continuity of insulation;
– Test 19: Dielectric dissipation factor;
– Test 23: Pin hole.

For definitions, general notes on methods of test and the complete series of methods of test for winding wires, see IEC 60851-1.

2 Normative references

The following referenced documents are indispensable for the application 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 60851-1, *Winding wires – Test methods – Part 1: General*

3 Test 5: Electrical resistance

Electrical resistance is the d.c. resistance at 20 °C of 1 m of wire.

The method used shall provide a precision of 0,5 %.

For bunched wires a length of up to 10 m shall be used and the ends shall be soldered before the measurement. When measuring the resistance to check for an excessive number of broken wires, a length of 10 m of bunched wire shall be used.

If the resistance R_t is measured at a temperature t other than 20 °C, the resistance R_{20} at 20 °C shall be calculated by means of the following formula:

$$R_{20} = \frac{R_t}{1+\alpha\,(t-20)}$$

where

t is the actual temperature in degrees Celsius during the measurement;

α is the temperature coefficient in K^{-1}.