

# INTERNATIONAL STANDARD



**Winding wires – Test methods –  
Part 1: General**



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2025 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

**About the IEC**

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

**About IEC publications**

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

**IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)**

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

**IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)**

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

**IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)**

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

**IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)**

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

**Electropedia - [www.electropedia.org](http://www.electropedia.org)**

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.



IEC 60851-1

Edition 3.1 2025-01  
CONSOLIDATED VERSION

# INTERNATIONAL STANDARD



**Winding wires – Test methods –  
Part 1: General**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 29.060.10

ISBN 978-2-8327-0128-7

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms, definitions and general notes on methods of test .....	6
3.1 Terms and definitions.....	6
3.2 General notes on methods of test .....	8
<del>Annex A (informative) Contents of IEC 60851-2 to IEC 60851-6 with indication of tests .....</del>	<del>.....</del>
<del>    A.1 General.....</del>	<del>.....</del>
<del>    A.2 IEC 60851-2 .....</del>	<del>.....</del>
<del>    A.3 IEC 60851-3 .....</del>	<del>.....</del>
<del>    A.4 IEC 60851-4 .....</del>	<del>.....</del>
<del>    A.5 IEC 60851-5 .....</del>	<del>.....</del>
<del>    A.6 IEC 60851-6 .....</del>	<del>.....</del>
Bibliography.....	15

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### WINDING WIRES – TEST METHODS –

#### Part 1: General

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

**This consolidated version of the official IEC Standard and its amendment has been prepared for your convenience.**

**IEC 60851-1:2021+AMD1:2025 edition 3.1 contains the third edition (2021-06) [documents 55/1913/FDIS and 55/1910/RVD] and its amendment 1 (2025-01) [documents 55/2057/FDIS and 55/2059/RVD].**

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

IEC 60851-1 has been prepared by IEC technical committee 55: Winding wires. It is an International Standard.

This third edition cancels and replaces the second edition published in 1996, and its amendment 1:2003 and amendment 2:2009. This edition constitutes a technical revision.

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

- a) revision to Clause 2 to update the list of normative references;
- b) revision to 3.2 atmospheric conditions for testing;
- c) addition to 3.2 with remarks concerning frequency and management of tests;
- ~~d) revision to Annex A to update the contents list of IEC 60851 series of tests.~~

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).

~~Annex A is for information only.~~

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

The committee has decided that the contents of this document and its amendment 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, or
- revised.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colour 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. It is composed of the following series:

- 1) *Winding wires – Test methods* (IEC 60851 series);
- 2) *Specifications for particular types of winding wires* (IEC 60317 series);
- 3) *Packaging of winding wires* (IEC 60264 series).

## WINDING WIRES – TEST METHODS –

### Part 1: General

#### 1 Scope

This part of IEC 60851 specifies the general notes on methods of test for winding wires. It also gives the definitions for terms used in IEC 60851 (all parts). ~~A survey of the contents of IEC 60851-2 to IEC 60851-6 is given in Annex A.~~

#### 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 60317 (all parts), *Specifications for particular types of winding wires*

IEC 60851-2:2009<sup>1</sup>, *Winding wires – Test methods – Part 2: Determination of dimensions*  
IEC 60851-2:2009/AMD1:2015  
IEC 60851-2:2009/AMD2:2019

IEC 60851-3:2009<sup>2</sup>, *Winding wires – Test methods – Part 3: Mechanical properties*  
IEC 60851-3:2009/AMD1:2013  
IEC 60851-3:2009/AMD2:2019

IEC 60851-4:2016, *Winding wires – Test methods – Part 4: Chemical properties*

IEC 60851-5:2008<sup>3</sup>, *Winding wires – Test methods – Part 5: Electrical properties*  
IEC 60851-5:2008/AMD1:2011  
IEC 60851-5:2008/AMD2:2019

IEC 60851-6:2012, *Winding wires – Test methods – Part 6: Thermal properties*

#### 3 Terms, definitions and general notes on methods of test

##### 3.1 Terms and definitions

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

<sup>1</sup> A consolidated version of IEC 60851-2:2009 and its amendments exists.

<sup>2</sup> A consolidated version of IEC 60851-3:2009 and its amendments exists.

<sup>3</sup> A consolidated version of IEC 60851-5:2008 and its amendments exists.