



NSAI
Standards

Irish Standard
I.S. EN 60243-2:2014

Electric strength of insulating materials - Test methods -- Part 2: Additional requirements for tests using direct voltage

I.S. EN 60243-2:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN 60243-2:2014

Published:

2014-02-21

This document was published under the authority of the NSAI and comes into effect on:

2014-03-04

ICS number:

17.220.99

29.035.01

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

EN 60243-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2014

ICS 17.220.99; 29.035.01

Supersedes EN 60243-2:2001

English version

**Electric strength of insulating materials -
Test methods -
Part 2: Additional requirements for tests using direct voltage
(IEC 60243-2:2013)**

Rigidité diélectrique des matériaux
isolants - Méthodes d'essai -
Partie 2: Exigences complémentaires pour
les essais à tension continue
(CEI 60243-2:2013)

Elektrische Durchschlagfestigkeit
von isolierenden Werkstoffen -
Prüfverfahren -
Teil 2: Zusätzliche Anforderungen für
Prüfungen mit Gleichspannung
(IEC 60243-2:2013)

This European Standard was approved by CENELEC on 2013-12-31. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 112/245/CDV, future edition 3 of IEC 60243-2, prepared by IEC/TC 112 "Evaluation and qualification of electrical insulation materials and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60243-2:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-09-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-12-31

This document supersedes EN 60243-2:2001.

This standard shall be read in conjunction with EN 60243-1.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60243-2:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated :

IEC 60674-2 NOTE Harmonized as EN 60674-2.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60243-1	2013	Electric strength of insulating materials - Test methods - Part 1: Tests at power frequencies	EN 60243-1	2013

This page is intentionally left blank



IEC 60243-2

Edition 3.0 2013-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electric strength of insulating materials – Test methods –
Part 2: Additional requirements for tests using direct voltage**

**Rigidité diélectrique des matériaux isolants – Méthodes d’essai –
Partie 2: Exigences complémentaires pour les essais à tension continue**





THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2013 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.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

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

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
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 corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you 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

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

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - 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: csc@iec.ch.

A propos de la CEI

La Commission Electrotechnique Internationale (CEI) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications CEI

Le contenu technique des publications de la CEI est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Liens utiles:

Recherche de publications CEI - www.iec.ch/searchpub

La recherche avancée vous permet de trouver des publications CEI en utilisant différents critères (numéro de référence, texte, comité d'études,...).

Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

Just Published CEI - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications de la CEI. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 60243-2

Edition 3.0 2013-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electric strength of insulating materials – Test methods –
Part 2: Additional requirements for tests using direct voltage**

**Rigidité diélectrique des matériaux isolants – Méthodes d’essai –
Partie 2: Exigences complémentaires pour les essais à tension continue**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

J

ICS 17.220.99; 29.035.01

ISBN 978-2-8322-1200-4

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	5
4 Significance of the test	5
5 Electrodes and test specimens	6
6 Conditioning before tests	6
7 Surrounding medium	6
8 Electrical apparatus.....	6
8.1 Voltage source.....	6
8.2 Voltage measurement	7
9 Procedure.....	7
10 Mode of increase of voltage.....	7
11 Criterion of breakdown	7
12 Number of tests	7
13 Report	7
Bibliography.....	8

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC STRENGTH OF INSULATING MATERIALS –
TEST METHODS –**
Part 2: Additional requirements for tests using direct voltage

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.

International Standard IEC 60243-2 has been prepared by technical committee 112: Evaluation and qualification of electrical insulation materials and systems

This third edition cancels and replaces the second edition published in 2001, and constitutes an editorial revision.

This standard shall be read in conjunction with IEC 60243-1.

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

CDV	Report on voting
112/245/CDV	112/266A/RVC

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 60243 series, published under the general title *Electric strength of insulating materials – Test methods*, 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 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.

ELECTRIC STRENGTH OF INSULATING MATERIALS – TEST METHODS –

Part 2: Additional requirements for tests using direct voltage

1 Scope

This part of IEC 60243 gives requirements additional to those in IEC 60243-1 for the determination of the electric strength of solid insulating materials under direct voltage stress.

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 60243-1:2013, *Electric strength of insulating materials – Test methods – Part 1: Tests at power frequencies*

3 Terms and definitions

For the purposes of this document, the terms and definitions in IEC 60243-1:2013 apply.

4 Significance of the test

In addition to the requirements of Clause 4 of IEC 60243-1:2013, the following points shall be considered when using direct-voltage tests.

For a non-homogeneous test specimen, with alternating voltage, the distribution of voltage stress within the test specimen is determined by impedance (largely capacitive). With an increasing direct voltage, the voltage distribution may still be largely capacitive but depends partly on the rate of voltage increase. The resistive voltage distribution, after constant voltage application, represents the steady-state condition. The choice between direct or alternating voltage depends upon the purpose for which the breakdown test is to be used and, to some extent, on the intended application of the material.

Upon direct voltage application, the following currents result: the capacitive current, the electric absorption current, the leakage current and, in some cases, partial discharge currents.

In addition, for materials with dissimilar layers or discontinuities, the voltage distribution across the test specimen is also influenced, as a result of interfacial polarization, by charges of opposite polarity, which may accumulate on the two sides of the interface and create local fields sufficiently strong to produce partial discharges and/or breakdown of the test specimens.

For most materials, the d.c. breakdown voltage is higher than the peak value of the power-frequency breakdown voltage; for many materials, particularly those which are non-homogeneous, the d.c. breakdown voltage will be three times higher than the a.c. breakdown voltage or even more.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-