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:

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60243-2

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)

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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

Ref. No. EN 60243-2:2014 E

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• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-12-31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.

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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.

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

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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

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IEC 60243-2

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ELECTRIC STRENGTH OF INSULATING MATERIALS – TEST METHODS –

Part 2: Additional requirements for tests using direct voltage

FOREWORD

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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.