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

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NATIONAL FOREWORD

See Eesti standard EVS-EN 60243-2:2014 sisaldab Euroopa standardi EN 60243-2:2014 inglisekeelset teksti.	This Estonian standard EVS-EN 60243-2:2014 consists of the English text of the European standard EN 60243-2:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.02.2014.	Date of Availability of the European standard is 21.02.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 17.220.99, 29.035.01

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60243-2

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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)

CENELEC

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

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• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-12-31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

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

CONTENTS

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.