

SLOVENSKI STANDARD

SIST EN 60343:1998

01-oktober-1998

Recommended test methods for determining the relative resistance of insulating materials to breakdown by surface discharges (IEC 60343:1991)

Recommended test methods for determining the relative resistance of insulating materials to breakdown by surface discharges

Empfohlene Prüfverfahren zur Bestimmung der relativen Beständigkeit isolierender Werkstoffe gegen Durchschlag infolge Oberflächenteilentladung

Méthodes d'essai recommandées pour la détermination de la résistance relative des matériaux isolants au claquage par les décharges superficielles

<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>

Ta slovenski standard je istoveten z: EN 60343:1992

ICS:

29.035.01	Izolacijski materiali na splošno	Insulating materials in general
-----------	----------------------------------	---------------------------------

SIST EN 60343:1998

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60343:1998

<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>

EUROPEAN STANDARD

EN 60343

NORME EUROPEENNE

EUROPÄISCHE NORM

October 1992

UDC 621.315.61:620.1:621.3.015.532

Descriptors: Electrical insulating material, solid electrical insulating material, electric strength, electrical endurance test, electrical discharge, electrical breakdown, test condition

ENGLISH VERSION

Recommended test methods for determining the relative resistance of insulating materials to breakdown by surface discharges
(IEC 343:1991)

Méthodes d'essai recommandées
pour la détermination de la
résistance relative des
matériaux isolants au claquage
par les décharges superficielles
(CEI 343:1991)

Empfohlene Prüfverfahren zur
Bestimmung der relativen
Beständigkeit isolierender
Werkstoffe gegen Durchschlag
infolge
Oberflächenglimmentladung
(IEC 343:1991)

ITEN STANDARD PREVIEW
(standards.iten.ai)

This European Standard was approved by CENELEC on 1992-09-15.
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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 343:1991 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 60343 on 15 September 1992.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1993-06-01
- latest date of withdrawal of conflicting national standards (dow) 1993-06-01

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ENDORSEMENT NOTICE

The text of the International Standard IEC 343:1991 was approved by CENELEC as a European Standard without any modification.

34cad3d3ee1c/sist-en-60343-1998

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

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

IEC Publication	Date	Title	EN/HD	Date
-----	----	-----	-----	----
60	series	High-voltage test techniques	HD 588	series
212	1971	Standard conditions for use prior to and during the testing of solid electrical insulating materials	HD 437 S1	1984
270	1981	Partial discharge measurements	-	-

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 60343:1998](https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998)

<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60343:1998

<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>

NORME INTERNATIONALE INTERNATIONAL STANDARD

**CEI
IEC**

60343

Deuxième édition
Second edition
1991-01

**Méthodes d'essai recommandées pour la
détermination de la résistance relative des
matériaux isolants au claquage par les
décharges superficielles**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

**Recommended test methods for determining the
relative resistance of insulating materials to
breakdown by surface discharges**

<https://standards.iteh.ai/en/standards/iec/60343-1998/34ead3d3ee1c/sist-en-60343-1998>

© IEC 1991 Droits de reproduction réservés — Copyright - all rights reserved

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 l'éditeur.

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 the publisher.

International Electrotechnical Commission
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland
e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

M

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

	Page
FOREWORD	5
Clause	
1 Scope	7
2 Normative references	7
3 Object and principle of test	7
4 Test arrangement	7
5 Electrical apparatus	13
6 Procedure	15
7 Factors to be taken into consideration	17
8 Test report	19
FIGURES	23

[SIST EN 60343:1998](https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998)
<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RECOMMENDED TEST METHODS FOR DETERMINING
THE RELATIVE RESISTANCE OF INSULATING MATERIALS
TO BREAKDOWN BY SURFACE DISCHARGES**

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

<https://standards.iteh.ai/catalog/standards/sist/11ea18c3-6f73-4d9b-a9e5-34ead3d3ee1c/sist-en-60343-1998>
 SIST EN 60343:1998

This International Standard has been prepared by Sub-Committee 15B: Endurance tests, of IEC Technical Committee No. 15: Insulating materials.

This second edition of IEC 343 replaces the first edition published in 1970.

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

Six Months' Rule	Report on Voting
15B(C0)65	15B(C0)70

Full information on the voting for the approval of this standard can be found in the Voting Report indicated in the above table.

RECOMMENDED TEST METHODS FOR DETERMINING THE RELATIVE RESISTANCE OF INSULATING MATERIALS TO BREAKDOWN BY SURFACE DISCHARGES

1 Scope

This International Standard concerns endurance tests with surface discharges. It is intended to assess the relative resistance of solid insulating materials to breakdown when exposed to surface discharges.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60, *High-voltage test techniques*.

IEC 212: 1971, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*.

IEC 270: 1981, *Partial discharge measurements*.

3 Object and principle of test

Simple means are required for assessing the relative resistance of solid insulating materials to breakdown when exposed to surface discharges while stressed by electrical field strengths at frequencies used in industrial service.

Experience shows that endurance tests, taking as a criterion the complete puncture of the material in the presence of surface discharges from several types of electrodes, provide a similar and reproducible classification of materials with respect to this type of stressing, provided that dry air is circulated around the electrodes and over the surface of the specimen during the test.

4 Test arrangement

4.1 Test electrodes

The tests shall be made using a stainless steel cylindrical electrode and a plate electrode. The precise grade of stainless steel is not important. These electrodes shall be as follows:

4.1.1 *Cylindrical electrode*

A cylinder of $6 \text{ mm} \pm 0,3 \text{ mm}$ diameter with the sharp edge removed to leave a 1 mm radius. This electrode with a mass not exceeding 30 g shall be normal to the surface of the specimen and rest upon it. With soft materials, a gap not exceeding $100 \text{ }\mu\text{m}$ between this electrode and the specimen is permitted to avoid possible mechanical damage.

It is convenient to introduce very thin specimens (thickness less than $100 \text{ }\mu\text{m}$) between electrodes fixed $100 \text{ }\mu\text{m}$ apart.

When necessary to reduce specimen capacitance and minimize thermal heating, cylindrical electrodes of less than 6 mm are permissible provided the radius of the electrode edge is maintained at 1 mm.

Figure 1 shows examples of two electrode arrangements which may be used. The arrangement shown in figure 1b avoids the electrode being seated slightly canted on the specimen when a gap between electrode and specimen is not necessary. Other arrangements are possible.

4.1.2 *Plate electrode*

A plate having an area greater than the area covered by discharges from the cylindrical electrode at the test voltage (see 4.2).

(standards.iteh.ai)

4.1.3 *Electrode arrangement*

The electrode arrangement, whenever possible, should have axial symmetry. The air inlet shall be in a position to obtain an air distribution as uniform as possible on the different electrodes to ensure reproducible results. The test may be made with one or several electrodes above the test sample. If several electrodes are used, the inter-electrode separation shall be sufficient to avoid interaction between the discharges from adjacent electrodes and not less than 50 mm (see figure 2).

4.2 *Test specimen*

Whenever possible, tests should be made on specimens of one or more of the following nominal thicknesses: 3,0 mm, 1,6 mm, 1,0 mm, $500 \text{ }\mu\text{m}$, $100 \text{ }\mu\text{m}$ and $25 \text{ }\mu\text{m}$. For each nominal thickness, not less than nine specimens (sample areas exposed to discharges) shall be tested at each voltage.

The specimen shall be of adequate area to avoid flashover and of uniform thickness, in accordance with normal industry tolerances. The upper surface of the specimen exposed to discharges shall be free from contamination.

To prevent small discharges between the specimen and the plate electrode it may be necessary to apply a conducting electrode to the lower surface of the specimen. Care shall be taken when selecting an electrode material to ensure that it does not react with or significantly change the specimen properties.