

<b>STN</b>	<b>Skúšobný postup na tepelnú odolnosť izolačných živíc a lakov na impregnačné účely Metódy elektrického prierazu</b>	<b>STN EN IEC 60370</b>
		34 6415

Test procedure for thermal endurance of insulating resins and varnishes for impregnation purposes - Electric breakdown methods

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola označená vo Vestníku ÚNMS SR č. 06/18

Obsahuje: EN IEC 60370:2018, IEC 60370:2017

Oznámením tejto normy sa od 17.01.2021 ruší  
STN 34 6415 z júna 2003

**126749**

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN IEC 60370**

March 2018

ICS 29.035.01

Supersedes HD 570 S1:1990

English Version

**Test procedure for thermal endurance of insulating resins and  
varnishes for impregnation purposes - Electric breakdown  
methods  
(IEC 60370:2017)**

Méthode d'essai pour l'évaluation de l'endurance thermique  
des résines et vernis isolants d'imprégnation - Méthodes de  
claquage électrique  
(IEC 60370:2017)

Prüfverfahren zur Beurteilung des thermischen  
Langzeitverhaltens von Isolierharzen und -lacken für  
Imprägnierungen - Elektrische Durchschlagmethoden  
(IEC 60370:2017)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

**EN IEC 60370:2018 (E)****European foreword**

The text of document 15/812/FDIS, future edition 2 of IEC 60370, prepared by IEC/TC 15 "Solid electrical insulating materials" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60370:2018.

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) 2018-10-17
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-01-17

This document supersedes HD 570 S1:1990.

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The text of the International Standard IEC 60370:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60455-2	NOTE	Harmonized as EN 60455-2.
IEC 60464-2	NOTE	Harmonized as EN 60464-2.

## Annex ZA

(normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60212	-	Standard conditions for use prior to and during the testing of solid electrical insulating materials	EN 60212	-
IEC 60216	series	Electrical insulating materials - Thermal endurance properties	EN 60216	series
IEC 60216-4-1	-	Electrical insulating materials - Thermal endurance properties -- Part 4-1: Ageing ovens - Single-chamber ovens	EN 60216-4-1	-
IEC 60216-4-2	-	Electrical insulating materials - Thermal endurance properties -- Part 4-2: Ageing ovens - Precision ovens for use up to 300 °C	EN 60216-4-2	-
IEC 60216-4-3	-	Electrical insulating materials - Thermal endurance properties -- Part 4-3: Ageing ovens - Multi-chamber ovens	EN 60216-4-3	-
IEC 60243-1	-	Electric strength of insulating materials - Test methods -- Part 1: Tests at power frequencies	EN 60243-1	-
IEC 60455-3-5	-	Resin based reactive compounds used for electrical insulation -- Part 3: Specifications for individual materials -- Sheet 5: Unsaturated polyester based impregnating resins	EN 60455-3-5	-
IEC 60464-3-2	-	Varnishes used for electrical insulation -- Part 3: Specifications for individual materials -- Sheet 2: Hot curing impregnating varnishes	EN 60464-3-2	-
IEC 60641-3-1	-	Pressboard and presspaper for electrical purposes -- Part 3: Specifications for individual materials -- Sheet 1: Requirements for pressboard, types B.0.1, B.0.3, B.2.1, B.2.3, B.3.1, B.3.3, B.4.1, B.4.3, B.5.1, B.5.3 and B.6.1	EN 60641-3-1	-
ISO 2078	-	Textile glass - Yarns - Designation	EN ISO 2078	-
ISO 2113	-	Reinforcement fibres - Woven fabrics - Basis for a specification	-	-



IEC 60370

Edition 2.0 2017-12

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Test procedure for thermal endurance of insulating resins and varnishes for impregnation purposes – Electric breakdown methods**

**Méthode d'essai pour l'évaluation de l'endurance thermique des résines et vernis isolants d'imprégnation – Méthodes de claquage électrique**





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**Test procedure for thermal endurance of insulating resins and varnishes for impregnation purposes – Electric breakdown methods**

**Méthode d'essai pour l'évaluation de l'endurance thermique des résines et vernis isolants d'imprégnation – Méthodes de claquage électrique**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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INTERNATIONALE

ICS 29.035.01

ISBN 978-2-8322-5108-9

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**INTERNATIONAL ELECTROTECHNICAL COMMISSION****TEST PROCEDURE FOR THERMAL ENDURANCE OF INSULATING RESINS AND VARNISHES FOR IMPREGNATION PURPOSES – ELECTRIC BREAKDOWN METHODS****FOREWORD**

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International Standard IEC 60370 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition cancels and replaces the first edition published in 1971. This edition constitutes a technical revision.

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

- a) this document is now describing two methods, the existing one, following ASTM D1932 and new a method following the requirements of IEC 60455-2 and IEC 60464-2;
- b) the theoretical background and way of calculation were removed, and replaced by reference to IEC 60216;
- c) the layout and numbering system was updated;
- d) for better understanding and illustration purposes examples were added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
15/812/FDIS	15/819/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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## INTRODUCTION

This document describes methods for thermal endurance testing. The methods described are in line with IEC 60216 (all parts). More information about the theory of thermal endurance, calculation methods and other possible methods can be found in IEC 60216 (all parts).

## TEST PROCEDURE FOR THERMAL ENDURANCE OF INSULATING RESINS AND VARNISHES FOR IMPREGNATION PURPOSES – ELECTRIC BREAKDOWN METHODS

### 1 Scope

This International Standard covers methods of test for the determination of thermal endurance (temperature index) of electrical insulating resins and varnishes for impregnation purposes.

It is done by means of impregnating glass cloth and measuring electric strength or breakdown voltage before and after heat ageing.

It covers the materials described in IEC 60455-3-5 and IEC 60464-3-2 and similar materials.

### 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 60212, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

IEC 60216 (all parts), *Electrical insulating materials – Thermal endurance properties*

IEC 60216-4-1, *Electrical insulating materials – Thermal endurance properties – Part 4-1: Ageing ovens – Single-chamber ovens*

IEC 60216-4-2, *Electrical insulating materials – Thermal endurance properties – Part 4-2: Ageing ovens – Precision ovens for use up to 300 °C*

IEC 60216-4-3, *Electrical insulating materials – Thermal endurance properties – Part 4-3: Ageing ovens – Multi-chamber ovens*

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

IEC 60455-3-5, *Resin based reactive compounds used for electrical insulation – Part 3: Specifications for individual materials – Sheet 5: Unsaturated polyester based impregnating resins*

IEC 60464-3-2, *Varnishes used for electrical insulation – Part 3: Specifications for individual materials – Sheet 2: Hot curing impregnating varnishes*

IEC 60641-3-1, *Pressboard and presspaper for electrical purposes – Part 3: Specifications for individual materials – Sheet 1: Requirements for pressboard, types B.0.1, B.0.3, B.2.1, B.2.3, B.3.1, B.3.3, B.4.1, B.4.3, B.5.1, B.5.3 and B.6.1*

ISO 2078, *Textile glass – Yarns – Designation*

ISO 2113, *Reinforcement fibers – Woven fabrics – Basis for a specification*

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