

---

---

**Reaktivne zmesi na osnovi smole, ki se uporabljajo za električno izolacijo –  
3. del: Specifikacije za posamezne materiale – List 5: Impregnacijske smole  
na osnovi nenasičenega poliestra (IEC 60455-3-5:2006)**

Resin based reactive compounds used for electrical insulation – Part 3:  
Specifications for individual materials – Sheet 5: Unsaturated polyester based  
impregnating resins (IEC 60455-3-5:2006)

**ITEH STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 60455-3-5:2006](https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006)

<https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 60455-3-5:2006

<https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006>

English version

**Resin based reactive compounds used for electrical insulation**  
**Part 3: Specifications for individual materials**  
**Sheet 5: Unsaturated polyester based impregnating resins**  
(IEC 60455-3-5:2006)

Composés réactifs à base de résines  
utilisés comme isolants électriques  
Partie 3: Spécifications  
pour matériaux particuliers  
Feuille 5: Résines d'imprégnation à base  
de polyester insaturé  
(CEI 60455-3-5:2006)

Reaktionsharzmassen  
für die Elektroisolierung  
Teil 3: Anforderungen  
an einzelne Werkstoffe  
Blatt 5: Imprägnierharzwerkstoffe  
auf Basis ungesättigter Polyester  
(IEC 60455-3-5:2006)

ITeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 60455-3-5:2006  
This European Standard was approved by CENELEC on 2006-02-01. 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, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 text of document 15/237/FDIS, future edition 3 of IEC 60455-3-5, prepared by IEC TC 15, Standards on specifications for electrical insulating materials, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60455-3-5 on 2006-02-01.

This European Standard supersedes 60455-3-5:2001.

The major changes from EN 60455-3-5:2001 concern the introduction of unsaturated polyester with low emission of volatile organic components. A definition, requirements and a test method for curing in thick layer and emissions during curing were added.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2006-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-02-01

Annex ZA has been added by CENELEC.

---

## iTeh **Endorsement notice** STANDARD PREVIEW

The text of the International Standard IEC 60455-3-5:2006 was approved by CENELEC as a European Standard without any modification.

[SIST EN 60455-3-5:2006](https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006)

<https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006>

## Annex ZA (normative)

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

The following referenced documents are indispensable for the application 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 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 60172	1987	Test procedure for the determination of the temperature index of enamelled winding wires	EN 60172	1994
IEC 60317-8	1990	Specifications for particular types of winding wires Part 8: Polyesterimide enamelled round copper wire, class 180	EN 60317-8	1994
IEC 60317-13	1990	Part 13: Polyester or polyesterimide overcoated with polyamide-imide enamelled round copper wire, class 200	EN 60317-13	1994
IEC 60455-1	1998	Resin based reactive compounds used for electrical insulation Part 1: Definitions and general requirements	EN 60455-1	1998
IEC 60455-2	1998	Part 2: Methods of test	EN 60455-2	1999
IEC 60464-2	2001	Varnishes used for electrical insulation Part 2: Methods of test	EN 60464-2	2001
IEC 61033	1991	Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate	-	-

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 60455-3-5:2006

<https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006>

NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC

60455-3-5

Troisième édition  
Third edition  
2006-03

---

---

**Composés réactifs à base de résines  
utilisés comme isolants électriques –**

**Partie 3:  
Spécifications pour matériaux particuliers –  
Feuille 5: Résines d'imprégnation à base de  
polyester insaturé**

ITCH STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 60455-3-5:2006  
<https://standards.iteh.ai/catalog/standards/sist/155a-45c-431e-azad-374f16048/sist-en-60455-3-5-2006>  
**Resin based reactive compounds used  
for electrical insulation –**

**Part 3:  
Specifications for individual materials –  
Sheet 5: Unsaturated polyester based  
impregnating resins**

© IEC 2006 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, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

L

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

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	9
1 Scope.....	11
2 Normative references .....	11
3 Terms and definitions .....	13
4 Designation .....	13
5 Requirements .....	13
5.1 Flash point .....	15
5.2 Density.....	15
5.3 Viscosity.....	15
5.4 Curing in thick layer and emissions during curing .....	15
5.5 Effect of the reactive compound on enamelled wires .....	17
5.6 Temperature index .....	17
5.7 Resistance to vapour of solvents.....	17
5.8 Effect of water immersion on volume resistivity .....	17
Annex A (normative) Curing in thick layer and determination of emissions .....	19

**ITeH STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 60455-3-5:2006

<https://standards.iteh.ai/catalog/standards/sist/1efc155a-f45c-431e-a2ad-814f11fe04f8/sist-en-60455-3-5-2006>



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RESIN BASED REACTIVE COMPOUNDS USED  
FOR ELECTRICAL INSULATION –****Part 3: Specifications for individual materials –  
Sheet 5: Unsaturated polyester based impregnating resins**

## 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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.

This International Standard has been prepared by IEC technical committee 15: Standards on specifications for electrical insulating materials.

This third edition of IEC 60455-3-5 cancels and replaces the second edition (2001) and constitutes a technical revision. The major changes from the previous edition concern the introduction of unsaturated polyester with low emission of volatile organic components. Definition, requirements and a test method for curing in thick layer and emissions during curing were added.