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Standards

Irish Standard  
I.S. EN 61249-2-43:2016

Materials for printed boards and other interconnecting structures - Part 2-43: Reinforced base materials clad and unclad - Non-halogen epoxide cellulose paper/woven E-glass reinforced laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly

**I.S. EN 61249-2-43:2016**

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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## National Foreword

I.S. EN 61249-2-43:2016 is the adopted Irish version of the European Document EN 61249-2-43:2016, Materials for printed boards and other interconnecting structures - Part 2-43: Reinforced base materials clad and unclad - Non-halogen epoxide cellulose paper/woven E-glass reinforced laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly

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EUROPEAN STANDARD

EN 61249-2-43

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2016

ICS 31.180

English Version

Materials for printed boards and other interconnecting structures -  
Part 2-43: Reinforced base materials clad and unclad -  
Non-halogenated epoxide cellulose paper/woven E-glass  
reinforced laminate sheets of defined flammability (vertical burning  
test), copper-clad for lead-free assembly  
(IEC 61249-2-43:2016)

Matériaux pour circuits imprimés et autres structures  
d'interconnexion - Partie 2-43: Matériaux de base renforcés,  
plaqués et non plaqués - Feuilles stratifiées renforcées en  
verre de type E tissé/papier cellulose époxyde non  
halogéné, plaquées cuivre, d'inflammabilité définie (essai  
de combustion verticale) pour les assemblages sans plomb  
(IEC 61249-2-43:2016)

Materialien für Leiterplatten und andere  
Verbindungsstrukturen - Teil 2-43: Kaschierte und  
unkaschierte verstärkte Basismaterialien - Kupferkaschierte  
mit Zellulose-Papier im Kernbereich und E-Glasgewebe in  
den Außenlagen verstärkte Laminattafeln auf der Basis von  
halogenfreiem Epoxidharz mit definierter Brennbarkeit  
(Brennprüfung mit vertikaler Prüflingslage) für bleifreie  
Bestückungstechnik  
(IEC 61249-2-43:2016)

This European Standard was approved by CENELEC on 2016-06-16. 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 CEN-CENELEC Management Centre or to any CENELEC member.

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

## **European foreword**

The text of document 91/1350/FDIS, future edition 1 of IEC 61249-2-43, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61249-2-43:2016.

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) 2017-03-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-06-16

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

ISO 9000	NOTE	Harmonized as EN ISO 9000.
ISO 14001	NOTE	Harmonized as EN ISO 14001.

## 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 1 When 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 61189-2	2006	Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 2: Test methods for materials for interconnection structures	EN 61189-2	2006
IEC 61249-5-1	-	Materials for interconnection structures - Part 5: Sectional specification set for conductive foils and films with or without coatings - Section 1: Copper foils (for the manufacture of copper-clad base materials)	EN 61249-5-1	-
IEC/PAS 61249-6-3	-	Specification for finished fabric woven from "E" glass for printed boards	-	-
ISO 11014	-	Safety data sheet for chemical products - Content and order of sections	-	-

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**IEC 61249-2-43**

Edition 1.0 2016-05

# **INTERNATIONAL STANDARD**

## **NORME INTERNATIONALE**

**Materials for printed boards and other interconnecting structures –  
Part 2-43: Reinforced base materials clad and unclad – Non-halogenated  
epoxide cellulose paper/woven E-glass reinforced laminate sheets of defined  
flammability (vertical burning test), copper-clad for lead-free assembly**

**Matériaux pour circuits imprimés et autres structures d'interconnexion –  
Partie 2-43: Matériaux de base renforcés, plaqués et non plaqués – Feuilles  
stratifiées renforcées en verre de type E tissé/papier cellulose époxyde non  
halogéné, plaquées cuivre, d'inflammabilité définie (essai de combustion  
verticale) pour les assemblages sans plomb**



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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

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**IEC 61249-2-43**

Edition 1.0 2016-05

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halogéné, plaquées cuivre, d'inflammabilité définie (essai de combustion  
verticale) pour les assemblages sans plomb**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 31.180

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**MATERIALS FOR PRINTED BOARDS  
AND OTHER INTERCONNECTING STRUCTURES –**
**Part 2-43: Reinforced base materials clad and unclad –  
Non-halogenated epoxide cellulose paper/woven E-glass  
reinforced laminate sheets of defined flammability  
(vertical burning test), copper-clad for lead-free assembly**

## FOREWORD

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International Standard IEC 61249-2-43 has been prepared by IEC technical committee 91: Electronics assembly technology.

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

FDIS	Report on voting
91/1350/FDIS	91/1363/RVD

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 of the IEC 61249 series, under the general title *Materials for printed boards and other interconnecting structures*, 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.

## MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

### Part 2-43: Reinforced base materials clad and unclad – Non-halogenated epoxide cellulose paper/woven E-glass reinforced laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly

#### 1 Scope

This part of IEC 61249 gives requirements for properties of non-halogenated epoxide cellulose paper reinforced core/woven E-glass reinforced surface laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly in thicknesses of 0,60 mm up to 1,70 mm. The flammability rating is achieved through the use of non-halogenated fire retardants reacted as part of the epoxide polymeric structure. The glass transition temperature is defined to be 100 °C minimum.

Some property requirements may have several classes of performance. The class desired should be specified on the purchase order, otherwise the default class of material will be supplied.

#### 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 61189-2:2006, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 2: Test methods for materials for interconnection structures*

IEC 61249-5-1, *Materials for interconnection structures – Part 5: Sectional specification set for conductive foils and films with and without coatings – Section 1: Copper foils (for the manufacture of copper-clad base materials)*

IEC PAS 61249-6-3, *Specification for finished fabric woven from "E" glass for printed boards*

ISO 11014, *Safety data sheet for chemical products – Content and order of sections*

#### 3 Materials and construction

##### 3.1 General

The sheet consists of an insulating base with metal-foil bonded to one side or both.

##### 3.2 Resin system

Non-halogen epoxide, filled or unfilled, resulting in a laminate with a glass transition temperature of 100 °C minimum. The maximum total halogens contained in the resin plus reinforcement matrix is  $1,5 \times 10^{-3}$  parts (1 500 ppm) with a maximum chlorine of  $9 \times 10^{-4}$  parts (900 ppm) parts and maximum bromine being  $9 \times 10^{-4}$  parts (900 ppm).



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