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Standards

Irish Standard  
I.S. EN 61249-4-16:2009

Materials for printed boards and other interconnecting structures -- Part 4-16: Sectional specification set for prepreg materials, unclad (for the manufacture of multilayer boards) - Multifunctional non-halogenated epoxide woven E-glass prepreg of defined flammability (vertical burning test) for lead-free assembly (IEC 61249-4-16:2009 (EQV))

## I.S. EN 61249-4-16:2009

*Incorporating amendments/corrigenda issued since publication:*

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Údarás um Chaighdeáin Náisiúnta na hÉireann		

**Materials for printed boards and other interconnecting structures -  
Part 4-16: Sectional specification set for prepreg materials, unclad  
(for the manufacture of multilayer boards) -  
Multifunctional non-halogenated epoxide woven E-glass prepreg  
of defined flammability (vertical burning test) for lead-free assembly  
(IEC 61249-4-16:2009)**

Matériaux pour circuits imprimés  
et autres structures d'interconnexion -  
Partie 4-16: Série de spécifications  
intermédiaires pour matériaux préimprégnés,  
non plaqués  
(pour la fabrication des cartes multicouches) -  
Tissu de verre époxyde préimprégné  
multifonctionnel non halogéné de type E  
d'inflammabilité définie  
(essai de combustion verticale)  
destiné aux assemblages sans plomb  
(CEI 61249-4-16:2009)

Materialien für Leiterplatten und andere  
Verbindungsstrukturen -  
Teil 4-16: Rahmenspezifikationen  
für unkaschierte Prepreg-Materialien  
(zur Herstellung von Mehrlagenleiterplatten) -  
Mit E-Glasgewebe verstärkte Prepregs  
auf der Basis von multifunktionalem  
halogenfreiem Epoxidharz  
mit definierter Brennbarkeit  
(Brennprüfung mit vertikaler Prüflingslage)  
für bleifreie Bestückungstechnik  
(IEC 61249-4-16:2009)

This European Standard was approved by CENELEC on 2009-06-01. 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.

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, 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: Avenue Marnix 17, B - 1000 Brussels**

**I.S. EN 61249-4-16:2009**

EN 61249-4-16:2009

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**Foreword**

The text of document 91/852/FDIS, future edition 1 of IEC 61249-4-16, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61249-4-16 on 2009-06-01.

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) 2010-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-06-01

Annex ZA has been added by CENELEC.

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**Endorsement notice**

The text of the International Standard IEC 61249-4-16:2009 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 60194	NOTE Harmonized as EN 60194:2006 (not modified).
IEC 61249-2-7	NOTE Harmonized as EN 61249-2-7:2002 (not modified).
IEC 61249-2-8	NOTE Harmonized as EN 61249-2-8:2003 (not modified).
ISO 9000	NOTE Harmonized as EN ISO 9000:2005 (not modified).

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## 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 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 61249-2-37	- <sup>1)</sup>	Materials for printed boards and other interconnecting structures - Part 2-37: Reinforced base materials, clad and unclad - Modified non-halogenated epoxide woven E-glass laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly	EN 61249-2-37	2009 <sup>2)</sup>
IEC 62326-4	- <sup>1)</sup>	Printed boards - Part 4: Rigid multilayer printed boards with interlayer connections - Sectional specification	EN 62326-4	1997 <sup>2)</sup>
ISO 11014-1	1994	Safety data sheet for chemical products - Part 1: Content and order of sections	-	-

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**MATERIALS FOR PRINTED BOARDS AND  
OTHER INTERCONNECTING STRUCTURES –**
**Part 4-16: Sectional specification set for prepreg materials,  
unclad (for the manufacture of multilayer boards) –  
Multifunctional non-halogenated epoxide woven E-glass prepreg  
of defined flammability (vertical burning test) for lead-free assembly**

## 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.
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International Standard IEC 61249-4-16 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
91/852/FDIS	91/864/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 maintenance result 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.

A bilingual version of this publication may be issued at a later date.

## **MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –**

### **Part 4-16: Sectional specification set for prepreg materials, unclad (for the manufacture of multilayer boards) – Multifunctional non-halogenated epoxide woven E-glass prepreg of defined flammability (vertical burning test) for lead-free assembly**

#### **1 Scope**

This part of IEC 61249 gives requirements for properties of prepreg that are mainly intended to be used as bonding sheets in connection with laminates according IEC 61249-2-37 when manufacturing multilayer boards according to IEC 62326-4. Multilayer boards comprised of these materials are suitable for lead-free assembly processes. This material may also be used to bond other types of laminates.

Prepreg according to this standard is of defined flammability (vertical burning test). The flammability rating on fully cured prepreg is achieved through the use of non-halogenated flame retardants contained as an integral part of the polymeric structure. After curing of the prepreg according to the supplier's instructions, the glass transition temperature is defined to be 150 °C and 200 °C.

#### **2 Normative references**

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.

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 61249-2-37, *Materials for printed boards and other interconnecting structures – Part 2-37: Reinforced base materials, clad and unclad – Modified non-halogenated epoxide woven E-glass laminate sheets of defined flammability (vertical burning test), copper-clad for lead-free assembly*

IEC 62326-4, *Printed boards – Part 4: Rigid multilayer printed boards with interlayer connections – Sectional specification*

ISO 11014-1:1994, *Safety data sheet for chemical products – Part 1: Content and order of sections*

#### **3 Materials and construction**

The prepreg consists of a reinforcing E-glass fabric which is impregnated modified epoxide resin and partially cured to the B-stage.

##### **3.1 Reinforcement**

Woven E-glass as specified in the future IEC 61249-6-3 (under consideration), woven E-glass fabric (for the manufacture of prepreg and copper-clad laminate).

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