

INTERNATIONAL STANDARD

IEC
61249-4-5

First edition
2005-09

Materials for printed boards and other interconnecting structures –

Part 4-5:

**Sectional specification set for prepreg materials,
unclad – Polyimide, modified or unmodified,
woven E-glass prepreg of defined flammability**

© IEC 2005 — Copyright - all rights reserved

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

PRICE CODE

M

For price, see current catalogue

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Materials and construction.....	6
3.1 Reinforcement.....	6
3.2 Resin system.....	6
4 Properties.....	6
4.1 Properties related to the appearance of the prepreg	6
4.2 Properties related to B-stage prepreg	7
4.3 Properties related to prepreg after curing	8
5 Delivery form	9
5.1 Rolls.....	9
5.2 Sheets.....	9
5.3 Cut panels.....	10
6 Quality assurance.....	10
6.1 Quality system.....	10
6.2 Responsibility for inspection	10
6.3 Qualification inspection	10
6.4 Quality conformance inspection.....	10
6.5 Certificate of conformance.....	10
6.6 Safety data sheet	10
7 Packaging and marking	11
8 Shelf life	11
9 Ordering information.....	11
Bibliography.....	13
Table 1 – Flammability.....	9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MATERIALS FOR PRINTED BOARDS AND
OTHER INTERCONNECTING STRUCTURES –****Part 4-5: Sectional specification for prepreg materials, unclad –
Polyimide, modified or unmodified, woven E-glass prepreg
of defined flammability**

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.

International Standard IEC 61249-4-5 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
91/527/FDIS	91/537/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.

IEC 61249-4 consists of the following parts, under the general title *Materials for printed boards and other interconnecting structures – Part 4: Sectional specification set for prepreg materials, unclad*:

- Part 4-1: Epoxide woven E-glass prepreg of defined flammability¹
- Part 4-2: Multifunctional epoxide woven E-glass prepreg of defined flammability
- Part 4-5: Polyimide, modified or unmodified, woven E-glass prepreg of defined flammability
- Part 4-11: Non-halogenated epoxide, woven E-glass prepreg of defined flammability
- Part 4-12: Non-halogenated multifunctional epoxide woven E-glass prepreg of defined flammability

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.

¹ Under consideration.

MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

Part 4-5: Sectional specification set for prepreg materials, unclad – Polyimide, modified or unmodified, woven E-glass prepreg of defined flammability

1 Scope

This part of IEC 61249 gives requirements for properties of prepreg that is mainly intended to be used as bonding sheets in connection with laminates according IEC 61249-2-11 when manufacturing multilayer boards according to IEC 62326-4. This material may be also 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 brominated fire retardants contained as an integral part of the polymeric structure. After curing according to the supplier's instructions, the glass transition temperature is defined to be 170 °C minimum.

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 61189-2:1997, *Test methods for electrical materials, printed boards and other interconnecting structures and assemblies – Part 2: Test methods for materials for interconnection structures*

Amendment 1 (2000)

IEC 61249-2-11, *Materials for printed boards and other interconnecting structures – Part 2-11: Sectional specification set for reinforced base materials clad and unclad – Polyimide woven E-glass laminated sheet of defined flammability copper-clad*

IEC 61249-6-3, *Materials for printed boards and other interconnecting structures – Part 6-3: Sectional specification set for reinforcement materials – Woven E-glass (for the manufacture of prepregs and copper-clad base materials)²*

IEC 62326-4:1996, *Printed boards – Part 4: Rigid multilayer printed boards with interlayer connections – Sectional specification*

ISO 9000:2000, *Quality management systems – Fundamentals and vocabulary*

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

ISO 14001:2004, *Environmental management systems – Requirements with guidance for use*

² In preparation.