

STN	Materiály na plošné spoje a ostatné prepájacie štruktúry Časť 2-51: Vystužené plátované a neplátované základné materiály Neplátované základné materiály pre nosnú pásku kariet s integrovanými obvody	STN EN IEC 61249-2-51 34 6511
------------	--	---

Materials for printed boards and other interconnecting structures - Part 2-51: Reinforced base materials, clad and unclad - Base materials for integrated circuit card carrier tape, unclad

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/23

Obsahuje: EN IEC 61249-2-51:2023, IEC 61249-2-51:2023

137278

EUROPEAN STANDARD

EN IEC 61249-2-51

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2023

ICS 31.180

English Version

**Materials for printed boards and other interconnecting structures
- Part 2-51: Reinforced base materials, clad and unclad - Base
materials for integrated circuit card carrier tape, unclad
(IEC 61249-2-51:2023)**

Matériaux pour circuits imprimés et autres structures
d'interconnexion - Partie 2-51: Matériaux de base renforcés,
plaqués et non plaqués - Matériaux de base pour bande
support de carte à circuit intégré, non plaqués
(IEC 61249-2-51:2023)

Werkstoffe für Leiterplatten und andere
Verbindungsstrukturen - Teil 2-51: Kaschierte und
unkaschierte verstärkte Basismaterialien - Basismaterial als
Chipträger, nicht kaschiert
(IEC 61249-2-51:2023)

This European Standard was approved by CENELEC on 2023-06-15. 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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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 61249-2-51:2023 (E)**European foreword**

The text of document 91/1847/FDIS, future edition 1 of IEC 61249-2-51, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61249-2-51:2023.

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) 2024-03-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-06-15

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61249-2-51:2023 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 standard indicated:

ISO 9000 NOTE Approved as EN ISO 9000

ISO 14001 NOTE Approved as EN ISO 14001

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.cencenelec.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/PAS 61249-6-3 -		Specification for finished fabric woven from - "E" glass for printed boards		-
ISO 2813	-	Paints and varnishes - Determination of gloss value at 20°, 60° and 85°	EN ISO 2813	-
ISO 8296	-	Plastics - Film and sheeting - Determination of wetting tension	-	-
ISO 11014	2009	Safety data sheet for chemical products - Content and order of sections	-	-
ISO 21920-2	-	Geometrical product specifications (GPS) - Surface texture: Profile - Part 2: Terms, definitions and surface texture parameters	EN ISO 21920-2	-
ASTM D 882	-	Standard Test Method for Tensile Properties of Thin Plastic Sheeting	-	-



IEC 61249-2-51

Edition 1.0 2023-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Materials for printed boards and other interconnecting structures –
Part 2-51: Reinforced base materials, clad and unclad – Base materials for
integrated circuit card carrier tape, unclad**

**Matériaux pour circuits imprimés et autres structures d'interconnexion –
Partie 2-51: Matériaux de base renforcés, plaqués et non plaqués – Matériaux de
base pour bande support de carte à circuit intégré, non plaqués**

**THIS PUBLICATION IS COPYRIGHT PROTECTED****Copyright © 2023 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, 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 either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, 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'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

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

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -**webstore.iec.ch/advsearchform**

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 61249-2-51

Edition 1.0 2023-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Materials for printed boards and other interconnecting structures –
Part 2-51: Reinforced base materials, clad and unclad – Base materials for
integrated circuit card carrier tape, unclad**

**Matériaux pour circuits imprimés et autres structures d'interconnexion –
Partie 2-51: Matériaux de base renforcés, plaqués et non plaqués – Matériaux de
base pour bande support de carte à circuit intégré, non plaqués**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.180

ISBN 978-2-8322-6969-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 Construction and materials	7
4.1 Construction	7
4.2 Epoxide woven E-glass underlayer	7
4.3 Adhesive.....	7
4.4 Release film.....	7
5 Electrical properties.....	7
6 Non-electrical properties.....	8
6.1 Appearance of the IC carrier tape base materials.....	8
6.1.1 Delamination	8
6.1.2 Colloidal particles and metallic particles in underlayer	8
6.1.3 Colloidal particles in adhesive layer.....	8
6.1.4 Scratches of adhesive	8
6.1.5 Bubbles in underlayer.....	8
6.1.6 Breakages and exposures of reinforcement fibre in underlayer	8
6.2 Dimensional of IC carrier tape base materials	8
6.2.1 Length and width	8
6.2.2 Thickness of underlayer.....	8
6.2.3 Thickness of adhesive layer.....	8
6.3 Splices.....	8
6.4 Glass transition temperature	9
6.5 Surface properties of the underlayer side.....	9
6.6 Tensile strength and elongation at break.....	9
6.7 Water absorption	9
6.8 Peel strength	10
6.9 Resin flow	10
7 Quality assurance.....	10
7.1 Quality system	10
7.2 Responsibility for inspection	10
7.3 Positions of specimens on the sample	10
7.4 Qualification inspection	11
7.4.1 General	11
7.4.2 Samples	11
7.4.3 Frequency	11
7.4.4 Criterion rule	11
7.5 Quality conformance inspection	12
7.5.1 General	12
7.5.2 Inspection lot.....	12
7.5.3 Group A inspection	12
7.5.4 Group B inspection	12
7.5.5 Group C inspection	12
7.5.6 Criterion rule	12
7.5.7 Rejected lots	12

7.6	Certificate of conformance	12
7.7	Safety data sheet.....	12
8	Packaging, marking and storage.....	13
8.1	Packaging, marking	13
8.2	Storage, storage condition and shelf life	13
Annex A (normative) Requirements for the preparation of samples of some performance items		14
A.1	Ordering information	14
Annex B (informative) Engineering information		15
B.1	General.....	15
B.2	Chemical properties	15
B.3	Electrical properties	15
B.4	Mechanical properties	15
B.5	Physical properties	15
B.6	Thermal properties.....	15
Bibliography.....		16
Figure 1 – Construction of IC carrier tape base materials.....		7
Table 1 – Electrical properties		7
Table 2 – Glass transition temperature of underlayer		9
Table 3 – roughness, glossiness(60°) and surface energy.....		9
Table 4 – Tensile strength and elongation at break.....		9
Table 5 – Water absorption.....		9
Table 6 – Peel strength.....		10
Table 7 – Resin flow		10
Table 8 – Qualification and conformance inspection.....		11
Table A.1 – Requirements for the preparation of samples of some performance items		14

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MATERIALS FOR PRINTED BOARDS AND
OTHER INTERCONNECTING STRUCTURES –**
**Part 2-51: Reinforced base materials clad and unclad – Base
materials for integrated circuit card carrier tape, unclad**

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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.

IEC 61249-2-51 has been prepared by IEC technical committee 91, Electronics assembly technology. It is an International Standard.

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

Draft	Report on voting
91/1847/FDIS	91/1865/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61249 series, published 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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

Part 2-51: Reinforced base materials clad and unclad – Base materials for integrated circuit card carrier tape, unclad

1 Scope

This part of IEC 61249 specifies the construction, materials, property requirements, quality assurance, packaging, marking, storage of base materials for integrated circuit card carrier tape, unclad (hereinafter referred to as IC carrier tape base materials).

This document is applicable to IC carrier tape base materials, which is a glue-coated material, one side is woven E-glass reinforced epoxy underlayer, and the other side is coated with adhesive and protected by release film.

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

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

ISO 2813, *Paints and varnishes – Determination of gloss value at 20°, 60° and 85°*

ISO 8296, *Plastics – Film and sheeting – Determination of wetting tension*

ISO 11014:2009, *Safety data sheet for chemical products – Content and order of sections*

ISO 21920-2, *Geometrical product specifications (GPS) – Surface texture: Profile – Part 2: Terms, definitions and surface texture parameters*

ASTM D882, *Standard Test Method for Tensile Properties of Thin Plastic Sheeting*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN