

Materials for printed boards and other interconnecting structures —

Part 2-19: Reinforced base materials, clad and unclad — Epoxide cross-plyed linear fibreglass-reinforced laminated sheets of defined flammability (vertical burning test) copper clad

The European Standard EN 61249-2-19:2002 has the status of a British Standard

ICS 31.180

National foreword

This British Standard is the official English language version of EN 61249-2-19:2002. It is identical with IEC 61249-2-19:2001.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic assembly technology, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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This British Standard, having been prepared under the direction of the Electrotechnical Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 2 May 2002

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**Materials for printed boards and other interconnecting structures
Part 2-19: Reinforced base materials, clad and unclad –
Epoxide cross-plyed linear fibreglass-reinforced laminated sheets of
defined flammability (vertical burning test) copper clad
(IEC 61249-2-19:2001)**

Matériaux pour circuits imprimés et autres structures d'interconnexion
Partie 2-19: Matériaux de base renforcés, plaqués et non plaqués – Feuilles multicouches de fibre de verre linéaire cohérente avec résine époxyde pour hautes températures, d'inflammabilité définie (essai d'inflammabilité verticale), plaquées cuivre
(CEI 61249-2-19:2001)

Materialien für Leiterplatten und andere Verbindungsstrukturen
Teil 2-19: Kaschierte und unkaschierte verstärkte Basismaterialien - Kupferkaschierte mit kreuzweise angeordnetem Glasfasergelege verstärkte Epoxidharz-Laminattafeln mit definierter Brennbarkeit (Brennprüfung mit vertikaler Prüflingslage)
(IEC 61249-2-19:2001)

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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.

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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 91/264/FDIS, future edition 1 of IEC 61249-2-19, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61249-2-19 on 2002-02-01.

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) 2002-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-02-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annexes A and B are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61249-2-19:2001 was approved by CENELEC as a European Standard without any modification.

CONTENTS

1	Scope	4
2	Normative references	4
3	Materials and construction	4
3.1	Insulating base	4
3.2	Metal foil	5
4	Internal marking	5
5	Electrical properties	5
6	Non-electrical properties of the copper-clad laminate	5
6.1	Appearance of the copper-clad sheet	5
6.2	Appearance of the unclad face	7
6.3	Thickness	7
6.4	Bow and twist	7
6.5	Properties related to the copper foil bond	8
6.6	Punching and machining	8
6.7	Dimensional stability	8
6.8	Sheet sizes	9
6.9	Cut panels	9
7	Non-electrical properties of the base material after complete removal of the copper foil	9
7.1	Appearance of the base material	9
7.2	Flexural strength	10
7.3	Flammability	10
7.4	Water absorption	10
7.5	Measling	10
7.6	Glass transition temperature and cure factor	11
8	Quality assurance	11
8.1	Quality system	11
8.2	Responsibility for inspection	11
8.3	Qualification inspection	11
8.4	Quality conformance inspection	11
8.5	Certificate of conformance	11
8.6	Safety data sheet	11
9	Packaging and marking	12
	Annexes	13

MATERIALS FOR PRINTED BOARDS AND OTHER INTERCONNECTING STRUCTURES –

Part 2-19: Reinforced base materials, clad and unclad – Epoxide cross-ply linear fibreglass-reinforced laminated sheets of defined flammability (vertical burning test), copper-clad

1 Scope

This part of IEC 61249 gives requirements for properties of epoxide linear fibreglass reinforced copper-clad laminated sheet, of defined flammability with a thickness range from 0,05 mm to 0,40 mm.

NOTE Linear fibreglass is defined as all fibres being aligned in one direction (not randomly or perpendicularly aligned).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61249. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61249 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61189-2:1997, *Test methods for electrical materials, interconnection structures and assemblies – Part 2: Test methods for materials for interconnection structures*

IEC 61249-5-1:1995, *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)*

ISO 9000 (all parts), *Quality management systems*

ISO 14001:1996, *Environmental management systems – Specification with guidance for use*

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

3 Materials and construction

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

3.1 Insulating base

Epoxide cross-ply linear fibreglass laminate. Its flame resistance is defined in terms of the flammability requirements of 7.3.

3.2 Metal foil

Copper as specified in IEC 61249-5-1. The preferred foils are type A (electro-deposited copper) of standard ductility.

4 Internal marking

Not specified.

5 Electrical properties

The requirements for the electrical properties are shown in table 1.

Table 1 – Electrical properties

Property	Test method (IEC 61189-2)	Requirement
Resistance of foil	2E12	As specified in IEC 61249-5-1
Surface resistance, damp heat, steady state while in the humidity chamber (optional)	2E03	$\geq 10\,000\text{ M}\Omega$
Surface resistance, damp heat, steady state and recovery	2E03	$\geq 50\,000\text{ M}\Omega$
Volume resistivity after damp heat while in the humidity chamber (optional)	2E04	$\geq 10\,000\text{ M}\Omega\text{m}$
Volume resistivity after damp heat and recovery	2E04	$\geq 10\,000\text{ M}\Omega\text{m}$
Relative permittivity in "as received" condition	2E10	The average value shall not exceed 5,5
Dielectric dissipation factor in "as received" condition	2E10	The average value shall not exceed 0,035
Electrical strength	2E11	$\geq 30\text{ kV/mm}$
Surface resistance at 200 °C	2E07	$\geq 500\text{ M}\Omega$
Volume resistivity at 200 °C	2E07	$\geq 1\,000\text{ M}\Omega\text{m}$

6 Non-electrical properties of the copper-clad laminate

6.1 Appearance of the copper-clad sheet

The copper-clad face shall be substantially free from defects that may have an impact on the material fitness for use for the intended purpose.

6.1.1 Indentations

The size of an indentation, usually the length, shall be determined and given a point value to be used as measure of the quality.