



**SLOVENSKI STANDARD**  
**SIST EN 61086-2:1998**  
**01-junij-1998**

---

**Specification for coatings for loaded printed wire boards (conformal coatings) - Part 2: Methods of test (IEC 61086-2:1992)**

Specification for coatings for loaded printed wire boards (conformal coatings) -- Part 2: Methods of test

Bestimmung für Beschichtungen für bestückte Leiterplatten (conformal coatings) -- Teil 2: Prüfverfahren

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Spécification pour les revêtements appliqués sur les cartes de câblage imprimées et dotées de composants conventionnels (revêtements enrobants) -- Partie 2: Méthodes d'essai

<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc6e0485a2/sist-en-61086-2-1998>

**Ta slovenski standard je istoveten z: EN 61086-2:1994**

---

**ICS:**

31.180 Vě \ ə ə \ ^: lə \ ə \ ə \ ^ Printed circuits and boards  
] [ z ^

**SIST EN 61086-2:1998**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 61086-2:1998](#)

<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc6e0485a2/sist-en-61086-2-1998>

EUROPEAN STANDARD

EN 61086-2

NORME EUROPEENNE

EUROPÄISCHE NORM

August 1994

ICS 29.040.20

Descriptors: Printed circuit cards, printed circuit boards, wiring,  
protective coatings, tests

## ENGLISH VERSION

Specification for coatings for loaded printed  
wire boards (conformal coatings)  
Part 2: Methods of test  
(IEC 1086-2:1992)

Spécification pour les  
revêtements appliqués sur les  
cartes de câblage imprimées et  
dotées de composants  
conventionnels (revêtements  
enrobants)  
Partie 2: Méthodes d'essai  
(CEI 1086-2:1992)

Bestimmung für Beschichtungen  
für bestückte Leiterplatten  
(conformal coatings)  
Teil 2: Prüfverfahren  
(IEC 1086-2:1992)

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

This European Standard was approved by CENELEC on 1994-03-08.  
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.

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.

CENELEC members are the national electrotechnical committees of Austria, Belgium,  
Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg,  
Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## 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

© 1994 Copyright reserved to CENELEC members

Ref. No. EN 61086-2:1994 E

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1086-2:1992 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 61086-2 on 8 March 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-03-15
- latest date of withdrawal of conflicting national standards (dow) 1995-03-15

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annex A is informative and annex ZA is normative.

**iTeh STANDARD PREVIEW**  
**ENDORSEMENT NOTICE**  
**(standards.iteh.ai)**

The text of the International Standard IEC 1086-2:1992 was approved by CENELEC as a European Standard without any modification.

<https://standards.iteh.ai/catalog/standards/sist/75111f-4551-4270-87d1-85bc6e0485a2/sist-en-61086-2-1998>

-----

## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
68-2-2	1974	Basic environmental testing procedures Part 2: Tests - Tests B: Dry heat	EN 60068-2-2*	1993
68-2-3	1969	Test Ca: Damp heat, steady state	HD 323.2.3 S2*	1987
68-2-10	1988	Test J and guidance : Mould growth	HD 323.2.10 S3	1988
68-2-14	1984	Test N: Change of temperature	HD 323.2.14 S2*	1987
68-2-39	1976	Test Z/AMD: Combined sequential cold, low air pressure and damp heat test	HD 323.2.39 S1	1988
68-2-52	1984	Test Kb: Salt mist, cyclic (sodium chloride solution)	HD 323.2.52 S1	1987
243-1 (mod)	1988	Methods of test for electric strength of solid insulating materials - Part 1: Tests at power frequencies	HD 559.1 S1	1991
249-1	1982	Base materials for printed circuits Part 1: Test methods	EN 60249-1*	1993
249-2-5	1987	Part 2: Specifications - Specification No. 5: Epoxide woven glass fabric copper-clad laminated sheet of defined flammability (vertical burning test)	EN 60249-2-5*	1994

- \* EN 60068-2-2 includes supplement A:1976 to IEC 68-2-2  
 HD 323.2.3 S2 includes A1:1984 to IEC 68-2-3  
 HD 323.2.14 S2 includes A1:1986 to IEC 68-2-14  
 EN 60249-1 includes A1:1984 + A2:1989 + A3:1991 to IEC 249-1  
 EN 60249-2-5 includes A1:1989 + A2:1992 to IEC 249-2-5

IEC Publication -----	Date -----	Title -----	EN/HD -----	Date -----
250	1969	Recommended methods for the determination of the permittivity and the dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including metre wavelengths	-	-
464-2	1974	Specification for insulating varnishes containing solvent - Part 2: Test methods	-	-
1086-1	1992	Specification for coatings for loaded printed wire boards (conformal coatings) Part 1: Definitions, classification and general requirements	EN 61086-1	1994
1086-3	-	Part 3: Specifications for individual materials	EN 61086-3*	-

## Other publications:

- 
- ISO 1514:1984 - Paints and varnishes - Standard panels for testing
- ISO 1519:1973 - Paints and varnishes - Bend test (cylindrical mandrel)

iTech STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 61086-2:1998  
<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc6e0485a2/sist-en-61086-2-1998>

-----

\* EN 61086-3-1 was approved under the IEC-CENELEC parallel vote in July 1994

**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC  
1086-2**

Première édition  
First edition  
1992-10

**Spécification pour les revêtements appliqués  
sur les cartes de câblage imprimées et dotées  
de composants conventionnels (revêtements  
enrobants)**

**Partie 2:  
Méthodes d'essai  
(standards.iteh.ai)**

**Specification for coatings for loaded printed  
wire boards (conformal coatings)**

**Part 2:  
Methods of test**

© CEI 1992 Droits de reproduction réservés — Copyright — all rights reserved

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'éditeur.

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.

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Genève, Suisse



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

**R**

Pour prix, voir catalogue en vigueur  
For price, see current catalogue

## CONTENTS

	Page
FOREWORD.....	5
INTRODUCTION.....	7
Clause	
1 Scope.....	9
2 Normative references.....	9
3 Test specimens.....	11
3.1 Specimen A.....	11
3.2 Specimen B.....	13
3.3 Specimen C.....	13
3.4 Specimen D.....	13
3.5 Specimen E.....	15
4 Tests.....	15
4.1 Visual assessment.....	15
4.2 Properties after thermal cycling.....	15
4.3 Resistance to organic liquids.....	17
4.4 Coating removal.....	19
4.5 Dissipation factor and permittivity.....	21
4.6 Insulation resistance after damp heat.....	23
4.7 Mould growth.....	23
4.8 Shelf life.....	23
4.9 Flammability.....	25
4.10 Tackiness.....	25
4.11 Loss of volatile matter.....	27
4.12 Thermal ageing.....	29
4.13 Insulation resistance after salt mist.....	29
4.14 Extreme altitude and temperature test.....	31
4.15 Electric strength.....	33
4.16 Thermal expansion (solder joint failure).....	33
Figures.....	35
Annex A – Bend test (cylindrical mandrel).....	39



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATION FOR COATINGS  
FOR LOADED PRINTED WIRE BOARDS  
(CONFORMAL COATINGS)**

**Part 2: Methods of test**

**FOREWORD**

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.
- 4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc6e0485a2/sist-en-61086-2-1998>

This International Standard has been prepared by Sub-Committee 15C: Specifications, of IEC Technical Committee No. 15: Insulating materials.

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

Six Months' Rule	Report on Voting
15C(CO)294	15C(CO)322

Full information on the voting for the approval of this standard can be found in the Voting Report indicated in the above table.

Annex A is given for information only.

## INTRODUCTION

This International Standard forms an element of a series which deals with coatings for loaded printed wire boards (conformal coatings).

The series consists of three parts:

Part 1: Definitions, classification and general requirements (IEC 1086-1).

Part 2: Methods of test (IEC 1086-2).

Part 3: Specifications for individual materials (IEC 1086-3).

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61086-2:1998

<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc6e0485a2/sist-en-61086-2-1998>

# SPECIFICATION FOR COATINGS FOR LOADED PRINTED WIRE BOARDS (CONFORMAL COATINGS)

## Part 2: Methods of test

### 1 Scope

This International Standard gives the methods of test for electrical insulating materials suitable for application as coatings for loaded printed wire boards (conformal coatings).

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

- IEC 68-2-2: 1974, *Environmental testing. Tests B: Dry heat*  
<https://standards.iteh.ai/catalog/standards/sist/bf73f4f1-d331-4278-87d9-85bc9485736a/iec-68-2-2-1974>
- IEC 68-2-3: 1969, *Environmental testing. Test Ca: Damp heat, steady state*
- IEC 68-2-10: 1988, *Environmental testing. Test J and guidance: Mould growth*
- IEC 68-2-14: 1984, *Environmental testing. Test N: Change of temperature*
- IEC 68-2-39: 1976, *Environmental testing. Test Z/AMD: Combined sequential cold, low air pressure, and damp heat test*
- IEC 68-2-52: 1984, *Environmental testing. Test Kb: Salt mist, cyclic (sodium chloride solution)*
- IEC 243-1: 1988, *Methods of test for electric strength of solid insulating materials. Part 1: Tests at power frequencies*
- IEC 249-1: 1982, *Base materials for printed circuits. Part 1: Test methods*
- IEC 249-2-5: 1987, *Base materials for printed circuits. Part 2: Specifications – Specification No. 5: Epoxide woven glass fabric copper-clad laminated sheet of defined flammability (vertical burning test)*