SLOVENSKI STANDARD

SIST EN 61189-2:2006

december 2006

Preskusne metode za električne materiale, tiskane plošče, povezovalne strukture in sestave - 2. del: Preskusne metode za materiale povezovalnih struktur (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 61189-2:2006)

ICS 31.180; 31.190

Referenčna številka
SIST EN 61189-2:2006(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61189-2

September 2006

ICS 31.180

Supersedes EN 61189-2:1997 + A1:2000

English version

Test methods for electrical materials, printed boards and other interconnection structures and assemblies Part 2: Test methods for materials for interconnection structures

(IEC 61189-2:2006)

Méthodes d'essais pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles
Partie 2: Méthodes d'essai des matériaux pour structures d'interconnexion
(CEI 61189-2:2006)

Prüfverfahren für Elektromaterialien, Leiterplatten und andere Verbindungsstrukturen und Baugruppen
Teil 2: Prüfverfahren für Materialien für Verbindungsstrukturen
(IEC 61189-2:2006)

This European Standard was approved by CENELEC on 2006-09-01. 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.

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, 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: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61189-2:2006 E

Foreword

The text of document 91/564/FDIS, future edition 2 of IEC 61189-2, prepared by IEC TC 91, Electronics assembly technology, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61189-2 on 2006-09-01.

This European Standard supersedes EN 61189-2:1997 + A1:2000.

The significant technical changes with respect to EN 61189-2:1997 + A1:2000 concern the addition of several new tests in the following categories:

- C: Chemical test methods
- D: Dimensional test methods
- E: Electrical test methods
- M: Mechanical test methods
- N: Environmental test methods
- X: Miscellaneous test methods

This standard forms part of a series and should be used in conjunction with other parts in the same series, under the main title *Test methods for electrical materials, interconnection structures and assemblies:*

Part 1: General test methods and methodology

Part 2: Test methods for materials for interconnection structures

Part 3: Test methods for interconnection structures (printed boards)

Part 4: Test methods for electronic components assembling characteristics

Part 5: Test methods for printed board assemblies

Part 6: Test methods for materials used in electronic assemblies

It should also be read in conjunction with EN 60068, Environmental testing.

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)	2007-06-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61189-2:2006 was approved by CENELEC as a European Standard without any modification.

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.

Publication	Year	Title	EN/HD	Year
IEC 60068-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1[1)]	1994
IEC 60068-2-2	1974	Environmental testing Part 2: Tests - Tests B: Dry heat	EN 60068-2-2[2)]	1993
IEC 60068-2-78	2001	Environmental testing Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001
IEC 60093	1980	Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials	HD 429 S1	1983
IEC 60243-1	1998	Electrical strength of insulating materials - Test methods Part 1: Tests at power frequencies	EN 60243-1	1998
IEC 61189-3	1997	Test methods for electrical materials, printed boards and other interconnection structures and assemblies Part 3: Test methods for interconnection structures (printed boards)	EN 61189-3	1997
ISO 3274	1996	Geometrical Product Specifications (GPS) - Surface texture: Profile method - Nominal characteristics of contact (stylus) instruments	EN ISO 3274	1997
ISO 9001	2000	Quality management systems - Requirements	EN ISO 9001	2000
ANSI/UL-94	1993	Standard for tests for flammability of plastic materials for parts in devices and aplliances	-	-

[1)] EN 60068-1 includes corrigendum October 1988 + A1:1992 to IEC 60068-1.

[2)] EN 60068-2-2 includes Supplement A:1976 to IEC 60068-2-2.

INTERNATIONAL STANDARD

IEC 61189-2

Second edition
2006-05

Test methods for electrical materials, printed boards and other interconnection structures and assemblies –

Part 2: Test methods for materials for interconnection structures

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARDS AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2: Test methods for materials for interconnection structures

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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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 61189-2 has been prepared by IEC technical committee 91: Surface mounting technology, in cooperation with technical committee 52: Printed circuits (now disbanded), and technical committee 50: Environmental testing.

This second edition replaces the first edition, published in 1997, and its Amendment 1 (2000). It constitutes a technical revision.

The document 91/564/FDIS, circulated to the National Committees as Amendment 2, led to the publication of this new edition.

The text of this standard is based on the first edition, its amendment 1 and on the following documents:

FDIS	Report on voting
91/564/FDIS	91/572/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.

The significant technical changes with respect to the previous edition concern the addition of several new tests in the following categories:

– C: Chemical test methods
– D: Dimensional test methods:
– E: Electrical test methods
– M: Mechanical test methods
– N: Environmental test methods
– X: Miscellaneous test methods

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard forms part of a series and should be used in conjunction with other parts in the same series, all under the main title *Test methods for electrical materials, interconnection structures and assemblies*:

Part 1: General test methods and methodology
Part 2: Test methods for materials for interconnection structures
Part 3: Test methods for interconnection structures (printed boards)
Part 4: Test methods for electronic components assembling characteristics[1]
Part 5: Test methods for printed board assemblies
Part 6: Test methods for materials used in electronic assemblies

It should also be read in conjunction with IEC 60068: Environmental testing.

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.

INTRODUCTION

IEC 61189 relates to test methods for printed boards and printed board assemblies, as well as related materials or component robustness, irrespective of their method of manufacture.

The standard is divided into separate parts, covering information for the designer and the test methodology engineer or technician. Each part has a specific focus; methods are grouped according to their application and numbered sequentially as they are developed and released.

In some instances test methods developed by other TCs (e.g. TC 50) have been reproduced from existing IEC standards in order to provide the reader with a comprehensive set of test methods. When this situation occurs, it will be noted on the specific test method; if the test method is reproduced with minor revision, those paragraphs that are different are identified.

This part of IEC 61189 contains test methods for materials used to produce interconnection structures (printed boards) and electronic assemblies. The methods are self-contained, with sufficient detail and description so as to achieve uniformity and reproducibility in the procedures and test methodologies.

The tests shown in this standard are grouped according to the following principles:

P: preparation/conditioning methods
V: visual test methods
D: dimensional test methods
C: chemical test methods
M: mechanical test methods
E: electrical test methods
N: environmental test methods
X: miscellaneous test methods

To facilitate reference to the tests, to retain consistency of presentation, and to provide for future expansion, each test is identified by a number (assigned sequentially) added to the prefix (group code) letter showing the group to which the test method belongs.

The test method numbers have no significance with respect to an eventual test sequence; that responsibility rests with the relevant specification that calls for the method being performed. The relevant specification, in most instances, also describes pass/fail criteria.

The letter and number combinations are for reference purposes, to be used by the relevant specification. Thus "2D01" represents the first dimensional test method described in this publication.

In short, for this example, 2 is the part of IEC standard (61189-2), D is the group of methods, and 01 is the test number.

A list of all test methods included in this standard, as well as those under consideration is given in Annex B. This annex will be reissued whenever new tests are introduced.

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARDS AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2: Test methods for materials for interconnection structures

1 Scope

This part of IEC 61189 provides a catalogue of test methods representing methodologies and procedures that can be applied to test materials used for manufacturing interconnection structures (printed boards) and assemblies.

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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60093:1980, *Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials*

IEC 60243-1:1998, *Electrical strength of insulating materials – Test methods: Tests at power frequencies*

IEC 61189-3:1997, *Test methods for electrical materials, interconnection structures and assemblies – Part 3: Test methods for interconnection structures (printed boards)*

ISO 3274:1996, *Geometrical Products Specifications (GPS) – Surface texture: Profile method – Nominal characteristics of contact (stylus) instruments*

ISO 9001:2000, *Quality systems – Model for quality assurance in production, installation and servicing*

ANSI/UL-94:1993, *Standard for tests for flammability of plastic materials for parts in devices and appliances, Tests for*

3 Accuracy, precision and resolution

Errors and uncertainties are inherent in all measurement processes. The information given below enables valid estimates of the amount of error and uncertainty to be taken into account.

Test data serve a number of purposes which include:

– monitoring a process;
– enhancing confidence in quality conformance;
– arbitrating between customer and supplier.