
Preskusne metode za električne materiale, povezovalne strukture in sestave - 5-4. del: Preskusne metode za sestave plošč tiskanih vezij: spajkalne zlitine in stržensko polnjene ali nepolnjene žice

Test methods for electrical materials, interconnection structures and assemblies -- Part 5-4: Test methods for printed board assemblies: Solder alloys and fluxed and non-fluxed solid wire

iTeh STANDARD PREVIEW
(standard preview)
Prüfverfahren für Elektromaterialien, Leiterplatten und andere Verbindungsstrukturen und Baugruppen - Teil 5-4: Allgemeine Prüfverfahren für Materialien und Baugruppen - Lotlegierungen und Lotdraht mit und ohne Flussmittel für bestückte Leiterplatten

[SIST EN 61189-5-4:2015](https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-155201000000/sist-en-61189-5-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-155201000000/sist-en-61189-5-4-2015>

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles - Partie 5-4: Méthodes d'essai générales pour les matériaux et les assemblages - Alliages à braser et brasages solides fluxés et non fluxés pour les assemblages de cartes imprimées

Ta slovenski standard je istoveten z: EN 61189-5-4:2015

ICS:

31.180	Tiskana vezja (TIV) in tiskane plošče	Printed circuits and boards
31.190	Sestavljeni elektronski elementi	Electronic component assemblies

SIST EN 61189-5-4:2015

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61189-5-4:2015

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-1df5e478de2b/sist-en-61189-5-4-2015>

EUROPEAN STANDARD

EN 61189-5-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2015

ICS 31.180

English Version

Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 5-4: General test methods for materials and assemblies - Solder alloys and fluxed and non-fluxed solid wire for printed board assemblies (IEC 61189-5-4:2015)

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles - Partie 5-4: Méthodes d'essai générales pour les matériaux et les assemblages - Alliages à braser et brasages solides fluxés et non fluxés pour les assemblages de cartes imprimées (IEC 61189-5-4:2015)

Prüfverfahren für Elektromaterialien, Leiterplatten und andere Verbindungsstrukturen und Baugruppen - Teil 5-4: Allgemeine Prüfverfahren für Materialien und Baugruppen - Lotlegierungen und Lotdraht mit und ohne Flussmittel für bestückte Leiterplatten (IEC 61189-5-4:2015)

iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2015-02-12. 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 91/1212/FDIS, future edition 1 of IEC 61189-5-4, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61189-5-4:2015.

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) 2015-11-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-02-12

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

Endorsement notice

The text of the International Standard IEC 61189-5-4:2015 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 standards indicated:

IEC 60068-2-20	NOTE	Harmonized as EN 60068-2-20.
IEC 61189-1	NOTE	Harmonized as EN 61189-1.
IEC 61189-2:2006	NOTE	Harmonized as EN 61189-2:2006 (not modified).
IEC 61189-3:2007	NOTE	Harmonized as EN 61189-3:2008 (not modified).
IEC 61190-1-1	NOTE	Harmonized as EN 61190-1-1.
IEC 61190-1-2	NOTE	Harmonized as EN 61190-1-2.
IEC 61249-2-7	NOTE	Harmonized as EN 61249-2-7.
IEC 62137:2004	NOTE	Harmonized as EN 62137:2004 (not modified).
ISO 9001	NOTE	Harmonized as EN ISO 9001.
ISO 9455-2	NOTE	Harmonized as EN ISO 9455-2.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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.cenelec.eu

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61189-5	-	Test methods for electrical materials, interconnection structures and assemblies - Part 5: Test methods for printed board assemblies	EN 61189-5	-
IEC 61189-6	-	Test methods for electrical materials, interconnection structures and assemblies - Part 6: Test methods for materials used in manufacturing electronic assemblies	EN 61189-6	-
IEC 61190-1-3	-	Attachment materials for electronic assembly - Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications	EN 61190-1-3	-

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61189-5-4:2015

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-1df5e478de2b/sist-en-61189-5-4-2015>



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Test methods for electrical materials, printed boards and other interconnection structures and assemblies –
Part 5-4: General test methods for materials and assemblies – Solder alloys and fluxed and non-fluxed solid wire for printed board assemblies**

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-45f431219e6c/sist/61189-5-4:2015>

**Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles –
Partie 5-4: Méthodes d'essai générales pour les matériaux et les assemblages – Alliages à braser et brasages solides fluxés et non fluxés pour les assemblages de cartes imprimées**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.180

ISBN 978-2-8322-1999-7

**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
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Accuracy, precision and resolution	7
3.1 General.....	7
3.2 Accuracy.....	8
3.3 Precision.....	8
3.4 Resolution	9
3.5 Report.....	9
3.6 Student's <i>t</i> distribution	9
3.7 Suggested uncertainty limits	10
4 C: Chemical test methods.....	11
4.1 Test 5-4C01: Determination of the percentage of flux on/in flux-coated and/or flux-cored solder	11
4.1.1 Object.....	11
4.1.2 Test specimen	11
4.1.3 Apparatus.....	11
4.1.4 Test procedure	11
4.2 Test 5-4CXX	12
5 X: Miscellaneous test methods	12
5.1 Test 5-4X01: Spread test, extracted cored wires or preforms	12
5.1.1 Object.....	12
5.1.2 Method A.....	12
5.1.3 Method B.....	13
5.1.4 Additional information	15
5.2 Test 5-4X02: Spitting test of flux-cored wire solder	15
5.2.1 Object.....	15
5.2.2 Method A.....	15
5.2.3 Method B.....	16
5.2.4 Additional information	19
5.3 Test 5-4X03: Solder pool test.....	20
5.3.1 Object.....	20
5.3.2 Test specimen	20
5.3.3 Apparatus and reagents.....	20
5.3.4 Test procedure	20
5.3.5 Evaluation	21
5.3.6 Additional information	21
Bibliography.....	22
Figure 1 – Test apparatus for spitting test.....	16
Figure 2 – Test apparatus for spitting test, method B	18
Figure 3 – Collecting paper with printed concentric circles with 1 cm pitch.....	19

Table 1 – Student's t distribution	10
Table 2 – Typical spread areas defined in mm ²	13
Table 3 – Example of a test report – Spitting of flux-cored wire	19

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 61189-5-4:2015](https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-1df5e478de2b/sist-en-61189-5-4-2015)

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-1df5e478de2b/sist-en-61189-5-4-2015>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

—————

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

**Part 5-4: General test methods for materials and assemblies –
Solder alloys and fluxed and non-fluxed solid wire for
printed board assemblies**

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.

International Standard IEC 61189-5-4 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
91/1212/FDIS	91/1225/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.

This International Standard is used in conjunction with IEC 61189-1:1997, IEC 61189-2:2006, IEC 61189-3:2007.

A list of all parts in the IEC 61189 series, published under the general title *Test methods for electrical materials, printed boards and other interconnection structures and assemblies*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61189-5-4:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/2ddb24ba-66b1-4982-82f9-1df5e478de2b/sist-en-61189-5-4-2015>