



**NSAI**  
Standards

Irish Standard  
I.S. EN 61189-5-2:2015

Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 5-2: General test methods for materials and assemblies - Soldering flux for printed board assemblies

**I.S. EN 61189-5-2:2015**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 61189-5-2:2015

*Published:*

2015-03-13

*This document was published under the authority of the NSAI and comes into effect on:*

2015-03-31

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

**EN 61189-5-2**

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 5-2: General  
test methods for materials and assemblies - Soldering flux for  
printed board assemblies  
(IEC 61189-5-2:2015)**

Méthodes d'essai pour les matériaux électriques, les cartes  
imprimées et autres structures d'interconnexion et  
ensembles - Partie 5-2: Méthodes d'essai générales pour  
les matériaux et les assemblages - Flux de brasage pour  
les assemblages de cartes imprimées  
(IEC 61189-5-2:2015)

Prüfverfahren für Elektromaterialien, Verbindungsstrukturen  
und Baugruppen - Teil 5-2: Prüfverfahren für bestückte  
Leiterplatten - Teil Lötflusmittel  
(IEC 61189-5-2:2015)

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 91/1210/FDIS, future edition 1 of IEC 61189-5-2, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61189-5-2:2015.

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 61189-5-2:2015 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 Series	NOTE	Harmonized as EN 60068 Series.
IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified).
IEC 60068-2-20	NOTE	Harmonized as EN 60068-2-20.
IEC 61189-1	NOTE	Harmonized as EN 61189-1.
IEC 61189-2	NOTE	Harmonized as EN 61189-2.
IEC 61189-3	NOTE	Harmonized as EN 61189-3.
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.

## 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](http://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 61190-1-1	-	Attachment materials for electronic assembly - Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly	EN 61190-1-1	-
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	-
ISO 9455	Series	Soft soldering fluxes - Test methods	EN ISO 9455	Series
ISO 9455-1	-	Soft soldering fluxes - Test methods - Part 1: Determination of non-volatile matter, gravimetric method	EN 29455-1	-
ISO 9455-2	-	Soft soldering fluxes - Test methods - Part 2: Determination of non-volatile matter, ebulliometric method	EN ISO 9455-2	-

This page is intentionally left blank



**IEC 61189-5-2**

Edition 1.0 2015-01

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

---

**Test methods for electrical materials, printed boards and other interconnection structures and assemblies –  
Part 5-2: General test methods for materials and assemblies – Soldering flux for printed board assemblies**

**Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles –  
Partie 5-2: Méthodes d'essai générales pour les matériaux et les assemblages – Flux de brasage pour les assemblages de cartes imprimées**





## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2015 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 Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://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 corrigenda or an amendment might have been published.

#### IEC Catalogue - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

#### IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

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](http://webstore.iec.ch/justpublished)

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

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 15 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

More than 60 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://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: [csc@iec.ch](mailto:csc@iec.ch).

### 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.

#### Catalogue IEC - [webstore.iec.ch/catalogue](http://webstore.iec.ch/catalogue)

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

#### Recherche de publications IEC - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

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](http://webstore.iec.ch/justpublished)

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

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 15 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

Plus de 60 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [csc@iec.ch](mailto:csc@iec.ch).





**IEC 61189-5-2**

Edition 1.0 2015-01

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

---

**Test methods for electrical materials, printed boards and other interconnection structures and assemblies –  
Part 5-2: General test methods for materials and assemblies – Soldering flux for printed board assemblies**

**Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles –  
Partie 5-2: Méthodes d'essai générales pour les matériaux et les assemblages – Flux de brasage pour les assemblages de cartes imprimées**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 31.180

ISBN 978-2-8322-1997-3

**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 .....	5
INTRODUCTION .....	7
1 Scope .....	8
2 Normative references .....	8
3 Accuracy, precision and resolution .....	8
3.1 General .....	8
3.2 Accuracy .....	9
3.3 Precision .....	9
3.4 Resolution .....	10
3.5 Report .....	10
3.6 Student's <i>t</i> distribution .....	10
3.7 Suggested uncertainty limits .....	11
4 C: Chemical test methods .....	12
4.1 Test 5-2C01: Corrosion, flux .....	12
4.1.1 Object .....	12
4.1.2 Test specimen .....	12
4.1.3 Apparatus and reagents .....	12
4.1.4 Procedures .....	12
4.1.5 Additional information .....	14
4.2 Test 5-2C02: Determination of acid value of liquid soldering flux potentiometric and visual titration methods .....	14
4.2.1 Object .....	14
4.2.2 Test specimen .....	14
4.2.3 Apparatus and reagents .....	14
4.2.4 Procedures .....	15
4.2.5 Additional information .....	16
4.3 Test 5-2C03: Acid number of rosin .....	16
4.4 Test 5-2C04: Determination of halides in fluxes, silver chromate method .....	16
4.4.1 Object .....	16
4.4.2 Test specimen .....	17
4.4.3 Apparatus and reagents .....	17
4.4.4 Procedure .....	17
4.4.5 Evaluation .....	17
4.4.6 Additional information .....	17
4.5 Test 5-2C05: Solids content, flux .....	18
4.5.1 Object .....	18
4.5.2 Test specimen .....	18
4.5.3 Apparatus and reagents .....	18
4.5.4 Procedures .....	19
4.5.5 Evaluation .....	19
4.5.6 Additional information .....	19
4.6 Test 5-2C06: Quantitative determination of halide content in fluxes (chloride and bromide) .....	19
4.6.1 Object .....	19
4.6.2 Test specimen .....	20
4.6.3 Apparatus and reagents .....	20

4.6.4	Procedure.....	21
4.6.5	Calculations.....	22
4.6.6	Report .....	23
4.6.7	Additional information .....	23
4.7	Test 5-2C07: Qualitative analysis of fluorides and fluxes by spot test.....	24
4.7.1	Object.....	24
4.7.2	Test specimen .....	24
4.7.3	Apparatus and reagents.....	24
4.7.4	Procedure.....	24
4.8	Test 5-2C08: Quantitative determination of fluoride concentration in fluxes.....	24
4.8.1	Object.....	24
4.8.2	Test specimen .....	25
4.8.3	Apparatus and reagents.....	25
4.8.4	Procedure.....	25
4.8.5	Additional information .....	27
4.8.6	Informative references .....	27
4.9	Test 5-2C09: Specific gravity .....	27
4.9.1	Object.....	27
4.9.2	Test specimen .....	27
4.9.3	Apparatus .....	28
4.9.4	Test procedure .....	28
4.9.5	Evaluation .....	28
4.10	Test 5-2C10: Flux induced corrosion (copper mirror method) .....	28
4.10.1	Object.....	28
4.10.2	Test specimen .....	28
4.10.3	Apparatus and reagents.....	28
4.10.4	Procedure.....	29
4.10.5	Evaluation .....	29
4.10.6	Additional information .....	30
4.10.7	Reference documents.....	30
5	X: Miscellaneous test methods .....	30
5.1	Test 5-2X01: Liquid flux activity, wetting balance method.....	30
5.1.1	Object.....	30
5.1.2	Test specimen .....	30
5.1.3	Apparatus and reagents.....	31
5.1.4	Procedure.....	31
5.1.5	Evaluation .....	31
5.1.6	Additional information .....	31
5.2	Test 5-2X02: Spread test, liquid or extracted solder flux, solder paste and extracted cored wires or preforms.....	34
5.2.1	Object.....	34
5.2.2	Method A .....	34
5.2.3	Method B.....	35
5.2.4	Additional information .....	37
5.3	Test 5-2X03: Flux residues – Tackiness after drying .....	37
5.3.1	Object.....	37
5.3.2	Test specimen .....	37
5.3.3	Apparatus and reagents.....	37
5.3.4	Procedure.....	38

5.3.5	Evaluation .....	39
5.3.6	Additional information .....	39
Bibliography.....		40
Figure 1 – Chlorides and/or bromides test results .....		18
Figure 2 – Test equipment of specific gravity (hydrometer reading).....		28
Figure 3 – Flux type classification by copper mirror test .....		30
Figure 4 – Wetting balance apparatus .....		32
Figure 5 – Wetting balance curve.....		33
Table 1 – Student's <i>t</i> distribution.....		11
Table 2 – Relation between halide content and mass of specimen .....		22
Table 3 – Mixing ratio from specimen size to water quantity.....		25
Table 4 – Specimen size to chloroform mixture .....		26
Table 5 – Typical spread areas defined in mm <sup>2</sup> .....		35

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**TEST METHODS FOR ELECTRICAL MATERIALS,  
PRINTED BOARDS AND OTHER INTERCONNECTION  
STRUCTURES AND ASSEMBLIES –**
**Part 5-2: General test methods for materials and assemblies –  
Soldering flux 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 61189-5-2 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
91/1210/FDIS	91/1223/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 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.

## INTRODUCTION

IEC 61189 relates to test methods for materials or component robustness for printed board assemblies, 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 (for example, TC 104) 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 revisions, those paragraphs that are different are identified.

This part of IEC 61189 contains test methods for evaluating robustness of materials or component for printed board 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 "5-2C01" represents the first chemical test method described in IEC 61189-5-2.

In short, in this example, 5-2 is the number of the part of IEC 61189, C is the group of methods, and 01 is the test number.

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

### Part 5-2: General test methods for materials and assemblies – Soldering flux for printed board assemblies

#### 1 Scope

This part of IEC 61189 is a catalogue of test methods representing methodologies and procedures that can be applied to test printed board assemblies.

This part of IEC 61189 focuses on test methods for soldering flux based on the existing IEC 61189-5 and IEC 61189-6. In addition, it includes test methods of soldering flux for lead free soldering.

#### 2 Normative references

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.

IEC 61189-5, *Test methods for electrical materials, interconnection structures and assemblies – Part 5: Test methods for printed board assemblies*

IEC 61189-6, *Test methods for electrical materials, interconnection structures and assemblies – Part 6: Test methods for materials used in manufacturing electronic assemblies*

IEC 61190-1-1, *Attachment materials for electronic assembly – Part 1-1: Requirements for soldering fluxes for high-quality interconnections in electronics assembly*

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*

ISO 9455 (all parts), *Soft soldering fluxes – Test methods*

ISO 9455-1, *Soft soldering fluxes – Test methods – Part 1: Determination of non-volatile matter, gravimetric method*

ISO 9455-2, *Soft soldering fluxes – Test methods – Part 2: Determination of non-volatile matter, ebulliometric method*

#### 3 Accuracy, precision and resolution

##### 3.1 General

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



This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-