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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



91/2078/CD

COMMITTEE DRAFT (CD)

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91/2004/RR

IEC TC 91 : ELECTRONICS ASSEMBLY TECHNOLOGY

SECRETARIAT:

Japan

SECRETARY:

Mr Osamu IKEDA

OF INTEREST TO THE FOLLOWING COMMITTEES:

HORIZONTAL FUNCTION(S):

ASPECTS CONCERNED:

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Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 5-501: General test methods for materials and assemblies - Surface insulation resistance (SIR) testing of solder fluxes

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Resource materials

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- [OSD NC roles overview](#)
- [How to add and submit comments to the IEC](#)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Test methods for electrical materials, printed boards and other
interconnection structures and assemblies -
Part 5-501: General test methods for materials and assemblies - Surface
insulation resistance (SIR) testing of solder fluxes**

FOREWORD

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IEC 61189-5-501 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

This XXX edition cancels and replaces the XXX edition published in [publication_date], Amendment 1:[publication_date] and Amendment 2:[publication_date]. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Conversion of the test coupon specified in 5.2 into the updated IPC B53 REV C.1 board.
- b) Added Annex B explaining the technical background and details of the test board changes.

The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English [change language if necessary].

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at http://www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at <http://www.iec.ch/publications>.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under <http://webstore.iec.ch> in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

1 Scope

This part of IEC 61189 is used to quantify the deleterious effects of flux residues on surface insulation resistance (SIR) in the presence of moisture.

Interdigitated comb patterns comprising long parallel electrodes on an IPC B53 standardized test coupon are used for the evaluation. Coupons are conditioned and measurements taken at a high temperature and humidity. The electrodes are electrically biased during conditioning to facilitate electrochemical reactions, as shown in [Figure 1](#) and [Figure 3](#).

Reference can be made to [IEC TR 61189-5-506 \[1\]](#), which examines different geometry comb patterns: 400 μm $\times$ 500 μm ; 400 μm $\times$ 200 μm ; and 318 μm $\times$ 318 μm .

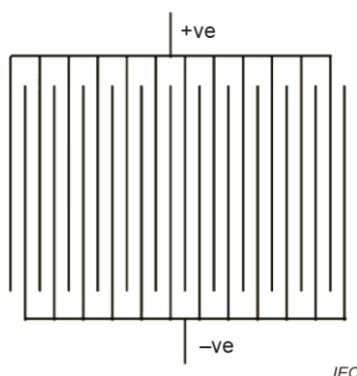


Figure 1 – SIR pattern

Specifically, this method is designed to simultaneously assess:

- leakage current caused by ionized water films and electrochemical degradation of test vehicle, (corrosion, dendritic growth);
- provide metrics that can appropriately be used for binary classification (e.g. go/no go; pass/fail);
- compare, rank or characterize materials and processes.

This test is carried out at high humidity and heat conditions.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-1:2013, *Environmental testing - Part 1: General and guidance*

IEC 60068-2-58, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60068-2-67, *Environmental testing – Part 2-67: Tests – Test Cy: Damp heat, steady state, accelerated test primarily intended for components*

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

IEC 60194–2, *Printed boards design, manufacture and assembly – Vocabulary – Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies*

IEC 61189–5–504, *Test methods for electrical materials, printed board and other interconnection structures and assemblies – Part 5-504: General test methods for materials and assemblies – Process ionic contamination testing (PICT)*

IEC 61190–1–3, *Attachment materials for electronic assembly – Part 1-3: Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solder for electronic soldering applications*

IEC 61249–2–7, *Materials for printed boards and other interconnecting structures – Part 2-7: Reinforced base materials clad and unclad – Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60068-1:2013, IEC 60068–2–58, IEC 60194–2, and IEC 61190–1–3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Equipment/Apparatus

4.1 Measurement instrument

This shall consist of a measuring device capable of measuring insulation resistance in the range of at least $10^6 \Omega$ to $10^{12} \Omega$.

It shall be capable of measuring and recording each individual test channel/pattern. The measurement circuit shall incorporate a 1 M Ω current limiting resistor in each current pathway.

The tolerance of the total measurement system shall be

- $\pm 5 \%$ up to $10^{10} \Omega$ at 5 V;
- $\pm 10 \%$ between $10^{10} \Omega$ to $10^{11} \Omega$ at 5 V;
- $\pm 20 \%$ above $10^{11} \Omega$ at 5 V.

If a different test voltage is to be used, the measurement circuit shall be assessed at that voltage rather than the 5 V stipulated. See [Clause A.5](#) for additional information on test voltages.

The resistors used to confirm the ‘total measurement system tolerance’ defined above, shall have a purchased tolerance of

- $\pm 0,1 \%$ up to and including $10^6 \Omega$;
- $\pm 1 \%$ above $10^6 \Omega$ and up to and including $10^8 \Omega$;
- $\pm 5 \%$ above $10^8 \Omega$ and up to and including $10^{10} \Omega$;
- $\pm 10 \%$ above $10^{10} \Omega$.