

# INTERNATIONAL STANDARD

# IEC 61189-5

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**Test methods for electrical materials,  
interconnection structures and assemblies –**

**Part 5:  
Test methods for printed board assemblies**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

#### Part 5: Test methods for printed board assemblies

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International Standard IEC 61189-5 has been prepared by IEC technical committee 91: Electronic assembly technology.

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

FDIS	Report on voting
91/608/FDIS	91/619/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 standard is to be used in conjunction with the following parts of IEC 61189:

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 6: Test methods for materials used in electronic assemblies

and also the following standard:

IEC 60068: Environmental testing

The list of all the parts of the IEC 61189 series, under the general title *Test methods for electrical materials, 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 maintenance result 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- withdrawn;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.

## 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 (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 revision, those paragraphs that are different are identified.

This part of IEC 61189 contains test methods for evaluating 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 criterion.

The letter and number combinations are for reference purposes to be used by the relevant specification. Thus "5C01" represents the first chemical test method described in IEC 61189-5.

In short, in this example, 5 is the number of the part of IEC 61189, C 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, INTERCONNECTION STRUCTURES AND ASSEMBLIES –

### Part 5: Test methods 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.

#### 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 60068-2-20, *Environmental testing – Part 2-20: Tests – Test T: Soldering*

IEC 61189-1, *Test methods for electrical materials, interconnection structures and assemblies – Part 1: General test methods and methodology*

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

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 61190-1-2:2002, *Attachment materials for electronic assembly – Part 1-2: Requirements for solder pastes 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*

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*

IEC 62137:2004, *Environmental and endurance testing - Test methods for surface-mount boards of area array type packages FBGA, BGA, FLGA, LGA, SON and QFN*

ISO 5725-2, *Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 9001, *Quality management systems – Requirements*

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*