IEC 61189-2-801

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INTERNATIONAL STANDARD

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Test methods for electrical materials, printed boards and other interconnection structures and assemblies – Part 2-801: Thermal conductivity test for base materials

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles – Partie 2-801: Essai de conductivité thermique pour matériaux de base

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 2-801: Thermal conductivity test for base materials

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

Draft	Report on voting
91/1757/CDV	91/1862/RVC

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.

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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 www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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.

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

Part 2-801: Thermal conductivity test for base materials

1 Scope

This part of IEC 61189 defines a test method to be followed for thermal performance via carbon ink heating. The method employs a screened-on pattern of carbon ink used to determine the thermal performance of a dielectric layer on a metal base plate.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Applicability and use of data

This method may be used on any smooth, rigid metal clad laminate providing that the metal base has a thickness of 1,02 mm. The best results are achieved by using a machinable, 1,57 mm thick piece of aluminium alloy. Soft metal or metal with a rough surface is not suitable for this test method.

5 Test specimens

5.1 Number

Five specimens shall be prepared, unless an alternative number has been specified.

5.2 Form

Specimens shall be 25,4 mm × 25,4 mm and have dielectric applied to a single side of the 1,57 mm metal base. Specimens shall include 2 strips of copper that measure 2,5 mm × 20 mm, with a 5 mm spacing between the two. See Figure 1 for the required specimen dimensions.

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Dimensions in millimetres

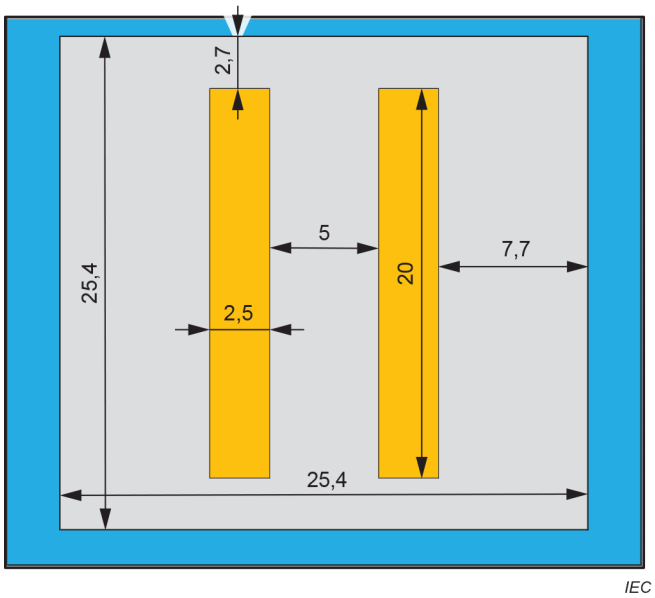

Figure 1 – Specimen dimensions

A centralised hole shall be drilled in the 1,57 mm aluminium substrate. The location of the hole shall be such that it is equidistant between the two copper electrodes and terminates at the midpoint, as demonstrated in Figure 2.

Dimensions in millimetres

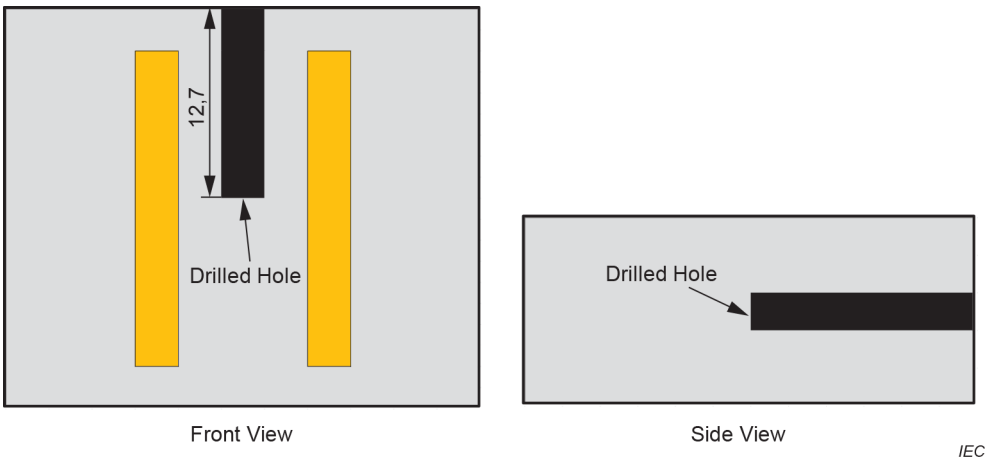

Figure 2 – Location of 0,55 mm hole

5.3 Preparation of the test specimen

a) Deposit a 12 mm × 5 mm rectangle of carbon ink on the dielectric surface, using a rubber squeegee and a 195-mesh screen that has a 12 mm × 5 mm aperture. See Figure 3 for an example of carbon paste applied to a screen prior to printing.

b) Locate the carbon ink printing such that it is perpendicular to the length of the copper electrodes and is central to the specimen surface.

c) Ensure that the screen and specimen are secured such that there will be no movement during the printing of the carbon ink.

d) For printing the carbon ink, apply the ink to one of the narrow edges of the rectangle and then use the rubber squeegee to spread the paste along the length of the rectangle in the screen, in a single motion. A small amount of downward force should be applied when moving the squeegee from one side of the frame to the other.

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