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Materials for circuit boards and other interconnecting structures - Part 3-6: Sectional specification set for unreinforced base materials clad and unclad - Polytetrafluoroethylene (PTFE) filled laminate sheets of defined flammability (vertical burning test), copper-clad

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC 61249-3-6 has been prepared by IEC technical committee 91: Electronics assembly technology. It is an International Standard.

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

Draft	Report on voting
91/2102/FDIS	91/2110/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.

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/publications.

A list of all parts in the IEC 61249 series, published under the general title *Materials for circuit boards and other interconnecting structures*, can be found on the IEC website.

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

– reconfirmed,

– withdrawn, or

– revised.

1 Scope

This part of IEC 61249 specifies requirements for properties of polytetrafluoroethylene (PTFE) filled unreinforced laminated sheet of a thickness 0,02 mm up to 3,2 mm, of defined flammability (vertical burning test), copper-clad.

This document is applicable to the design, manufacture, use of PTFE filled unreinforced laminated sheet of defined flammability (vertical burning test), copper-clad.

Its flame resistance is defined in terms of the flammability requirements of 8.3.

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 61189-2, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 2: Test methods for materials for interconnection structures*

IEC 61189-2-721, *Test methods for electrical materials, printed board and other interconnection structures and assemblies - Part 2-721: Test methods for materials for interconnection structures - Measurement of relative permittivity and loss tangent for copper clad laminate at microwave frequency using split post dielectric resonator*

IEC 61189-2-803, *Test methods for electrical materials, printed board and other interconnection structures and assemblies - Part 2-803: Test methods for Z-axis expansion of base materials and printed boards*

IEC 61189-2-805, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies - Part 2-805: X/Y CTE test for thin base materials by TMA*

IEC 61189-2-807, *Test methods for electrical materials, printed board and other interconnection structures and assemblies - Part 2-807: Test methods for materials for interconnection structures - Decomposition temperature (T_d) using TGA*

IEC 61249-5-1, *Materials for interconnection structures - Part 5: Sectional specification set for conductive foils and films with or without coatings - Section 1: Copper foils (for the manufacture of copper-clad base materials)*

ISO 11014, *Safety data sheet for chemical products - Content and order of sections*

IPC-TM-650 TM 2.5.5.5, *Stripline Test for Permittivity and Loss Tangent (Dielectric Constant and Dissipation Factor) at X-Band*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology 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

3.2 Abbreviated terms

CTE Coefficient of thermal expansion

PTFE Polytetrafluoroethylene

4 Construction and materials

4.1 Construction

The sheet consists of an insulating base made of PTFE or modified PTFE as the primary resin, with metal-foil bonded to one side or both.

4.2 Resin system

PTFE resin or modified PTFE as the primary resin, with a filler addition.

4.3 Filler

Typical filling (filler) materials can be silicon dioxide, titanium dioxide, aluminium oxide, boron nitride, chopped fiber, hollow sphere. It is possible to use other or additional filling material to achieve a specific characteristic.

4.4 Metal foil

Copper, as specified in IEC 61249-5-1, copper foil (for the manufacture of copper-clad materials). The preferred foils are electrodeposited of defined ductility.

4.5 Reinforcement

No reinforcement.

5 Internal marking

Shall be as agreed upon between user and supplier.

6 Electrical properties

The electrical properties requirements are shown in Table 1. For some typical values, see Annex A.