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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 13557-2017

Replacing GB/T 13557-1992

**Test methods for copper-clad material for flexible printed
circuits**

印制电路用挠性覆铜箔材料试验方法

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 13557-1992. This standard GB/T 13557-1992 "Printed circuit with flexible copper clad material test method" compared to editorial changes outside the main Technical changes are as follows:

- Modify Chapter 2 "Normative references" content;
- Added Chapter 3, "Terms and Definitions", folding endurance, bending fatigue, release materials, vertical and horizontal are defined;
- Added Chapter 4 "General requirements for testing", provides for the test of the atmospheric conditions, sample preparation and test reports;
- Added Chapter 5 "Appearance", including the depth of scratches, inclusions and holes, pinholes, pits and indentation inspection methods;
- Added Chapter 6 "Dimensions", including width, length, thickness measurement method;
- Increased 7.1 "dimensional stability", including after etching, heat treatment, etching and dimensional stability after heat treatment;
- 7.2 increase acceptance state peel strength test method; the peel strength after thermal shock to float after the peel strength test side Method; change the peel strength after dry heat to the peel strength test method after the temperature cycle; remove the stripping strength after simulated plating condition treatment Test methods for retention of strength and retention of peel strength after dipping;
- 7.3 "bending fatigue" will be the original single bend radius to a number of typical optional or agreed upon by both supply and demand;
- Increased by 7.4 "folding resistance";
- Added 8.1 "chemical resistance", including Peel strength retention after chemical treatment and chemical resistance;

- Increased 8.2 "thermal stress (floating welding)";
- Increased 8.3 "weldability";
- Added 9.1 "dielectric constant and dielectric loss factor";

1 Scope

GB/T 13557-2017 is the Chinese national standard on test methods for copper-clad material for flexible printed circuits, in the field of electronics. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 July 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 February 2018. Classification: ICS 31.180, CCS L30. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the appearance of the flexible printed circuit with copper foil material, size, physical properties, chemical properties, electrical properties and environmental performance experiment method. This standard applies to flexible printed circuit with copper foil material (hereinafter referred to as flexible copper clad material), also applies to the adhesive film.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document. Printed circuit terminology

GB/T 2036-1994 Test method for rigid copper clad laminates for printed circuits GB/T

GB/T 5169.22 Fire hazard testing for electrician and electronic products - Part 22. Test flame 50W flame device and confirmation test Test method

3 Terms and definitions

GB/T 2036-1994 defined and the following terms and definitions apply to this document.

3.1 Folding resistancetofolding Flexible copper clad material in the event of failure to bear the bending capacity.

3.2 Flexural fatigue flexuralendurance Capability of reciprocating flexural fatigue testing of

flexible copper clad laminates prior to failure.

3.3 Release material releasematerial A film or paper material that is used to protect the coated or supported product from the product and to keep the coated surface intact.

3.4 Vertical machinedirection (MD direction) In the continuous manufacturing of flexible CCL length direction, continuous with the material production in the same direction.

3.5 Transversed direction (TD) In the continuous width of flexible CCL production, it is perpendicular to the MD direction.

4.1 Test atmospheric conditions

4.1.1 Unless otherwise specified, the normal test atmospheric conditions.

a) Temperature. 15 °C ~ 35 °C;