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

GB/T 17473.4-2008

Replacing GB/T 17473.4-1998

**Test methods of precious metals pastes used for
microelectronics -- Determination of adhesion**

微电子技术用贵金属浆料测试方法 附着力测定

(English Translation)

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Foreword

This standard is GB/T 17473-1998 "precious metal pastes used for thick film microelectronics test methods" (all parts) Integration repair Book is divided into seven sections.

--- GB/T 17473.1-2008 microelectronics test method for measuring precious metal slurry solids content;

--- GB/T 17473.2-2008 microelectronics test method for measuring the fineness of precious metal pastes;

--- GB/T 17473.3-2008 microelectronics precious metal pastes used test method for measuring the resistance parties;

--- GB/T 17473.4-2008 microelectronics adhesion testing precious metal pastes used test methods;

--- GB/T 17473.5-2008 microelectronics precious metal slurry viscosity measurement test methods;

--- GB/T 17473.6-2008 microelectronics resolution measurement test methods of precious metal pastes;

--- GB/T 17473.7-2008 microelectronics precious metal pastes used test methods weldability, resistance to soldering determination.

This section GB/T of Part 417473-2008.

This Part replaces GB/T 17473.4-1998 "precious metal pastes used for thick film microelectronics Test Method for Determination of adhesion." this portion of the GB/T 17473.4-1998 compared to the main changes are as follows.

- The original standard name is amended as. microelectronics precious metal pastes used test methods - Determination of adhesion;
- Removing the original standard content "non-noble metals electronic pastes adhesion assay can also be performed with reference to this standard";
- Increased SnAg3.0Cu0.5 for lead-free solder welding conductor;
- Replace the original standard belt tunnel furnace sintering furnace;
- Increasing the temperature control of lead-free solder.

This part is proposed by the China Nonferrous Metals Industry Association.

The non-ferrous metal part by the National Standardization Technical Committee.

This section is your research Platinum Ltd. is responsible for drafting.

1 Scope

This section provides test methods microelectronics precious metal pastes adhesion.

This section applies to microelectronics precious metal pastes adhesion assay.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this section, however, encourage the parties to this part of the research agreement Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 8170 numerical rounding rules

3 PRINCIPLE OF THE METHOD

After the copper wire soldered to the ceramic substrate layer printed graphics cooked noble metal slurry on the copper surface perpendicular to the substrate is bent 90 °, placed the average of the tensile testing machine at a constant speed from the substrate evenly pull off the lead, with the lead when the pull-off force to represent the attached slurry Focus.

4 Materials

4.1

Al₂O₃ purity of not less than 95% of the ceramic substrate, the surface roughness in the range of 0.5μm ~ 1.5μm (measured at a distance of 10mm Under the conditions of measurement).

4.2

HLSn63PbA or HLSn63PbB Xiqianhanliao; HLSn63PbAgA HLSn63PbAgB or tin-lead-silver solder; SnAg3.0Cu0.5 Lead-free solder.

4.3

tinned copper wire having a diameter of $0.8\text{mm} \pm 0.02\text{mm}$.

4.4

capacity not less than 150mL solder bath.

4.5

Flux. rosin alcohol solution, the concentration of $0.15\text{g/mL} \sim 20\text{g/mL}$.

5 Instruments and equipment

5.1

tensile testing machine. range is $0\text{N} \sim 100\text{N}$, accurate measurement and recording of the pulling force should reach $\pm 5\%$.

5.2

screen printing machine, the screen pore size of $74\mu\text{m}$.

5.3

tunnel sintering furnace, the maximum temperature of $1000\text{ }^{\circ}\text{C}$, temperature control accuracy of $\pm 10\text{ }^{\circ}\text{C}$.

5.4

Thickness. accuracy of $1\mu\text{m}$.

6 Measuring step

At a temperature of $15\text{ }^{\circ}\text{C} \sim 35\text{ }^{\circ}\text{C}$, relative humidity of 45% to 75%, measured at atmospheric pressure $86\text{kPa} \sim 106\text{kPa}$ conditions.

6.1 Preparation of slurry film

6.1.1

The submission slurry Stir in central ceramic substrate printed $2\text{mm} \times 2\text{mm}$ graphics, should look uniform. each the total number of copies printed sample of not less than 10.

6.1.2

The printed pattern is a ceramic substrate at $150\text{ }^{\circ}\text{C} \sim 200\text{ }^{\circ}\text{C}$ drying, depending on the sintering temperature firing slurry deposition.