

Micromax™ 5744R

Electronic Inks and Pastes

Gold Conductor Composition

Micromax™ 5744R is a cadmium free* gold conductor. It has been specifically developed for automatic wire bonding with both Al and Au wires. Micromax™ 5744R is used for bonding pads on alumina and on Micromax™ 5704 dielectric, and as such, can be employed in single layer and crossover Pd/Ag circuits as well as in simple multilayer circuits using silver bearing conductors.

Product benefits

- Cadmium free* gold conductor and Phthalate free*
- Wide bonding window
- Suitable for manual and automatic gold and aluminum wire bonding
- High wire pull strengths after storage at 150 °C for 1,000 hours using Au and Al wires

*Cadmium and Phthalate 'free' as used herein means that cadmium is not an intentional ingredient in and is not intentionally added to the referenced product. Trace amounts however may be present

Product information

Solvent or thinner Micromax™ 9450

Rheological properties

Viscosity 280 - 350^[1] Pa.s

[1]: Brookfield HBT, 20rpm, SC4-14/6R utility cup and spindle, 25 °C ± 0.2 °C

Application technique

Mask mesh	325 ^[2]
Mask emulsion	12 µm
Drying time	10 - 15 min
Drying temperature	150 °C
Theoretical coverage	60 - 65 cm ² /g
Recommended film thickness, fired	7 - 9 µm
Print resolution, lines	≤175 µm
Print resolution, spaces	≥175 µm
Leveling time	5 - 10 min

[2]: Screen Types: Stainless steel

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Electrical properties

Surface resistivity

≤6.5^[3] mOhm per square

[3]: @ 8µm fired thickness

Storage and stability

Shelf life

6^[4] months

[4]: in unopened containers, from date of shipment, at room temperature (between 5 °C – 30 °C)

Additional information

How to use

Design & compatibility

- **Design notes**

- Properties are based on tests on 96% alumina substrates. In crossover and simple multilayer circuits using silver bearing conductors, Micromax™ 5744R is compatible with many materials, however, when mixing conductor of different metallurgy (including Pd-Ag and Ag with Au), caution should be exercised. Consult with your Micromax™ representative for recommendations on design and processing.

- **Compatibility**

- Whilst Micromax™ has tested this composition with the materials specified above and the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layouts. It is therefore essential that customers thoroughly evaluate the material in their specific situations in order to completely satisfy themselves with the overall quality and suitability of the composition for its intended application(s).

Processing

- **Substrates**

- Substrates of different compositions and from various manufacturers may result in variations in performance properties.

- **Screen types**

- 325 stainless steel screen with a 12µm emulsion build up

- **Printing**

- The composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean burr-free spatula (flexible plastic or stainless steel) for about 1- 2 minutes. Care must be taken to avoid air entrapment. Printing should be

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performed in a well ventilated area.

- Note : Optimum printing characteristics are generally achieved in the room temperature range of 20°C - 23°C. It is therefore important that the material, in its container, is at the temperature prior to commencement of printing. Class 10,000 printing area is recommended for building complex hybrids and multilayer circuits, otherwise severe yield losses could occur.

- **Thinning**

- Micromax™ 5744R composition is optimized for screen printing and thinning is not normally required. Use the Micromax™ recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or the use of a non recommended thinner may affect the rheological behaviour of the material and its printing characteristics.

- **Drying**

- Allow prints to level at room temperature, and then dried.

- **Firing**

- 850°C peak held for 10 minutes on 30-60 minute cycle in an air atmosphere.
- Fire in well ventilated belt, conveyor furnace or static furnace. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle and that no exhaust gases enter the room.

Properties

- Typical fired properties are based on laboratory data using recommended processing procedures.
- All values reported here are results of experiments in our laboratories intended to illustrate product performance potential with a given experimental design. They are not intended to represent the product's specifications, details of which are available upon demand.

General

Performance will depend to a large degree on care exercised in screen printing. Scrupulous care should be taken to keep the composition, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

Storage and shelf life

Containers may be stored in a clean, stable environment at room temperature

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(between 5°C – 30°C) with their lids tightly sealed. Storage in high temperature (>30°C) or in freezers (temperature <0°C) is NOT recommended as this could cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5°C – 30°C) is 6 months from date of shipment.

Safety and handling

For safety and handling information pertaining to this product, read Safety Data Sheet (SDS).

Typical 850°C 30 Minute Firing Profile

