Micromax™ 6145R

Microcircuit and Component Materials

Ag Co-Fire Inner Conductor Composition

Micromax™ 6145R is a co-fire Ag conductor composition compatible with the Micromax™ GreenTape™ 951 low temperature co-fired ceramic system. It is ideally suited to applications requiring high conductivity and to realize high frequency circuits.

Product benefits

When used with Micromax™ GreenTape™ 951 and compatible conductors pastes:

- High conductivity
- High frequency performance
- Co-fire processing
- High circuit density
- Phthalate, Cadmium, Nickel oxide free*

* Phthalate, Cadmium and Nickel oxide 'free' as used herein means that cadmium, phthalate and nickel oxide are not intentional ingredients in and are not intentionally added to the referenced product. Trace amounts however may be present

Product information

Solvent or thinner	Micromax™ 8250

Rheological properties

Viscosity	120 - 200[1]	Pa.s

[1]: Brookfield HBT, UC&SP, SC4-14/6R, 10 rpm, 25°C±0.2°C

Application technique

Mask mesh	325	
Mask emulsion	12	µm
Drying time	5	min
Drying temperature	120	°C
Theoretical coverage	60 - 70[2]	cm^2/g
Recommended film thickness, fired	11 - 15	µm
Print resolution, lines	125[3]	µm
Print resolution, spaces	125[3]	µm
Leveling time	≥10	min

[2]: based on fired thickness of 9-11µm

[3]: Dried Line Resolution

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Electrical properties

Surface resistivity	≤6[4]	mOhm per square

[4]: at 11µm fired thickness

Storage and stability

Shelf life	6[5]	months

[5]: in unopened containers, from date of shipment, at temperature between 5° C-30° C

Additional information

How to use

Design & compatibility

- Design
  - Recommended processing procedure for Micromax™ GreenTape™ 951 are detailed in the Low-Temperature Cofire dielectric Micromax™ GreenTape™ 951 technical data sheet. For compatible thick films compositions, consult your Micromax™ representative.
- 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 mesh 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 performed in a well ventilated area. Additional information on requirements for printing areas is available on request.

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- 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™ 6145R 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.
- Clean-up solvent
  - 1-Propoxy-2-Propanol
- Drying
  - Allow prints to level for over 10 minutes at room temperature, then dry in a well ventilated oven or conveyor dryer.
  - Dry for 5 minutes at 120°C. Do not over-dry.
- Firing
  - Consult Low-Temperature Cofire Dielectric Micromax™ GreenTape™ 951 technical data sheet for firing details.
  - 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

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 6145R based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

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

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

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