Micromax™ 9C41

Electronic Inks and Pastes

Ag Cofirable Via Fill Conductor Composition

Micromax™ 9C41 is a cofirable silver via fill compatible with Micromax™ GreenTape™ 95C low temperature co-fired ceramic system, targeting telecom application under 5G domain. Micromax™ 9C41 is ideally suited to provide reliable interconnection between Ag conductor layers.

Product benefits

- Co-fire processing
- High circuit density
- Phthalate, Lead, Cadmium, Nickel oxide free*

*Phthalate, Lead, Cadmium and Nickel oxide 'free' as used herein means that cadmium, lead, 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	1500 - 2800[1]	Pa.s

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

Application technique

Mask emulsion	25[2]- 50[3]	µm
Drying time	5	min
Drying temperature	80	°C
Via, diameter resolution	100	µm
Leveling time	5 - 10	min

[2]: Screen Types: Metal stencil

[3]: metal stencil

Electrical properties

Surface resistivity	3[4]	mOhm per square

[4]: fired dimension : 220µm diameter, 100µm thick tape

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Storage and stability

Shelf life	6[5] months

[5]: in unopened containers, from date of shipment, at temperature <25 °C

Additional information

How to use

Design & compatibility

- Design
  - For detailed recommendations on use of Micromax™ GreenTape™ 95C and conductors such as Micromax™ 9C41, see the GreenTape™ 95C Product Data Sheet. For compatible thick film compositions and their recommended use 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

- Screen types
  - 25-50µm thick etched or metal stencil, with a squeegee speed al low as 10mm/sec.
- 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.
  - 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.
  - Form vias in unfired Micromax™ GreenTape™ 95C low temperature co-fired ceramic system. The preferred method for via filling is use of stencil masks and screen printing methods. A

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vacuum stone or other support structure that uniformly distributes vacuum to the Micromax™ GreenTape™ 95C green sheet is recommended.

- Thinning
  - Micromax™ 9C41 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 for over 5-10 minutes at room temperature, then dry for 5 minutes at 80 °C Do not overdry.
  - Dry in a well ventilated oven or conveyor dryer.
- Lamination and firing
  - Laminate multiple sheets of Micromax™ GreenTape™ 95C onto which Micromax™ 9C41 has been printed according to processing parameters detailed in the GreenTape™ 95C Design Guide and on the GreenTape™ 95C Product Data Sheet. Consult these documents as well for details of the recommended GreenTape™ 95C firing profile for belt or box air furnaces.
  - 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.
  - Consult Micromax™ GreenTape™ 95C technical data sheet.

Properties

Typical Fired Properties

Test	Properties
Via Pitch Minimum	≥ 3x via diameter

Information in this datasheet shows anticipated typical physical properties for Micromax™ 9C41 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.

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Storage and shelf life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and handling

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