Micromax™ 6141H

Electronic Inks and Pastes

Ag Cofirable Via Fill Conductor Composition

Micromax™ 6141H is a cofirable silver via fill compatible with Micromax™ GreenTape™ 951 low temperature co-fired ceramic system. Micromax™ 6141H is ideally suited to provide reliable interconnection between Ag conductor layers.

Product benefits

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

*Cadmium, Lead, Nickel and Phthalate 'free' as used herein means that cadmium, lead, nickel, and phthalate 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™ 9450

Rheological properties

Viscosity	2500 - 3800[1]	Pa.s

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

Application technique

Mask emulsion	25 - 50[2]	µm
Drying time	5	min
Drying temperature	120	°C
Via, diameter resolution	100	µm
Via, pitch	≥200	µm
Leveling time	5 - 10	min

[2]: Screen Types: Metal stencil

Electrical properties

Surface resistivity	3[3]	mOhm per square

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

Storage and stability

Shelf life	3[4]	months

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

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Additional information

How to use

Design & compatibility

- Design
  - For detailed recommendations on use of Micromax™ GreenTape™ 951 and conductors such as Micromax™ 6141H, see the Micromax™ GreenTape™ 951 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 punched metal stencil, with a squeegee speed as low as 10mm/s.
- 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.
  - 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™ 951 low temperature co-fired ceramic system. The preferred method for via filling is use of stencil masks and screen printing methods. A vacuum stone or other support structure that uniformly distributes vacuum to the Micromax™ GreenTape™ 951 green sheet is

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recommended.

- Thinning
  - Micromax™ 6141H 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 in a well ventilated oven or conveyor dryer.
  - Dry for 5 minutes at 120°C Do not over-dry.
- Lamination and firing
  - Laminate multiple sheets of Micromax™ GreenTape™ 951 onto which Micromax™ 6141H has been printed according to processing parameters detailed in the Micromax™ GreenTape™ 951 Design Guide and Product Data Sheet. Consult these documents as well for details of the recommended Micromax™ GreenTape™ 951 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.

Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 6141H 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

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

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cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5°C – 30°C) is 3 months from date of shipment.

Safety and handling

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