Micromax™ 7881

Microcircuit and Component Materials

Series Heated Glass Composition

Micromax™ 788X Series Defogger Silver Paste is provided for use in the production of electrically heated backlights by a direct printing process. The pastes are screen-printed onto glass or black enamel and fired in fast fire glass furnaces. The resistance of the heater at constant voltage or current determines the power output. The resistance target is achieved by printing the silver paste to achieve the correct fired geometry (conductor length and cross-sectional area). For a fixed conductor pattern, the resistance target is achieved through controlling the fired thickness either by changing printing conditions (for example screen mesh) or by changing the silver content in the printed paste by blending the Micromax™ 788X series members.

This system is not designed to be electroplated.

Product benefits

- Lead and cadmium free system.
- Excellent conductivity with system capability for a wide range of resistivity.
- Uniform intense color.
- Excellent fired density giving good hiding power to clips soldered on to silver fired directory on glass (fired thickness > 7µm).
- Long screen life.
- Robust printing performance.
- Fully blendable system.

Product information

Solvent or thinner	Micromax™ 8250	
Solid content	83.5 - 84.5	%
Silver content	79.5 - 80.5	%
Blend member or series	788X	

Rheological properties

Viscosity	28 - 35[1]	Pa.s

[1]: Brookfield RVT, SC4-14/6R, 10 rpm, 25°C

Application technique

Mask mesh	150 - 250[2]	
Drying temperature	150	°C

[2]: stainless steel

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Electrical properties

Surface resistivity	2.6 - 3.4[3]	mOhm per square

[3]: at 10µm

Storage and stability

Shelf life	3[4]	months

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

Additional information

How to use

Design & compatibility

- Compatibility
  - Micromax™ 788X Series has been tested with a wide variety of both infra-red and UV-curable lead free enamels, with no known incompatibilities. However, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layout. It is therefore essential that customers thoroughly evaluate this material in their specific situations, in order to completely satisfy themselves as to the overall quality and suitability of the composition for its intended application (s).

Processing

- Paste preparation
  - Micromax™ 788X 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 1-2 minutes. Jar rolling paste is not appropriate for mixing and is not recommended.
  - In order to obtain a specific resistance value, the pastes can be blended with each other.
- Printing
  - Micromax™ 788X can be printed with 45T - 110T polyester or 150-250 mesh stainless steel screens with terpene-resistant emulsion. Printing should be carried out in a clean, well-ventilated area.
  - Note : Optimum printing characteristics of Micromax™ 788X are generally achieved in the temperature range 20°C - 23°C. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.
- Thinning

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- Micromax™ 788X is optimised for screen printing and thinning is not normally required. Micromax™ 8250 may be used sparingly for slight adjustments to viscosity or to replace evaporation losses. However, 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**
  - Dry with hot air at 150°C or with an infrared dryer to the required green strength.
- **Firing**
  - Fire between 625°C and 700°C for 2 to 4 minutes, followed by cold-air tempering. To achieve the desired properties, the furnace atmosphere must be controlled to avoid both contamination (due to sulphur for example) and poor burnout of the organic species due to low oxygen availability. Firing is the critical step in achieving designed properties. Within the firing conditions quoted above, the resistance will generally decrease with increasing firing temperature. Furthermore, some properties such as adhesion over glass or enamel will vary as a function of firing temperature.
- **Soldering**
  - Use 27Sn/70Pb/3A solder at 300-300°C and non-activated flux. To achieve good solder wetting, it is recommended that the surface of the fired silver to burnished with steel wool or fibreglass prior to soldering.

Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 788X 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 should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is three

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).