Micromax™ 7164

Microcircuit and Component Materials

Electroluminescent Materials

Micromax™ 7164 electroluminescent material is a translucent conductor designed for use as the front electrode for manufacturing Electroluminescent (EL) lamps. It is designed to be used as the first printed layer for lamps fabricated on PET or alternative (non-transparent) substrates which are compatible with Micromax™ electroluminescent compositions.

Product benefits

- Screen printable front electrode
- Low-cost translucent conductor
- High coverage
- Neutral body color
- 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™ 8261	
Solid content	43.5 - 45.5[1]	%

[1]: 130 °C/2hrs

Rheological properties

Viscosity	3.5 - 10[2]	Pa.s

[2]: Brookfield RVT, UC&SP, 10 rpm, 25 °C

Application technique

Mask mesh	62 - 77[3]	
Mask emulsion	20 - 25	µm
Drying time	5	min
Drying temperature	130	°C
Theoretical coverage	110 - 130	cm^2/g
Recommended film thickness, dried	25 - 40[4]	µm

[3]: 62T-77T, polyester

[4]: layer thickness

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Electrical properties

Surface resistivity	1E7[5]	mOhm per square

[5]: at 25µm, printed on 125µm polyester

Storage and stability

Shelf life	6[6]	months

[6]: in unopened containers, from date of shipment, at temperature <25° C (>0° C)

Additional information

How to use

Design & compatibility

- Design
  - Small lit areas - Micromax™ 7164 electroluminescent material has a resistivity 100 times that of sputtered ITO film. As a consequence, lit areas need to be kept small in order to achieve good uniformity of illumination. Areas up to 10cm x 5cm have been constructed without noticeable darkening towards the center (powered at 115V/400Hz). Variation in processing parameters, along with applied voltage and frequency will influence the lamp's lit area and must be evaluated first.
  - Bus bar - Light output and uniformity can be optimized by reducing the contact resistance and minimizing the voltage drop across the translucent conductor. This is achieved by printing a silver bus bar in contact with the translucent conductor and close to the lit area around the perimeter of the lamp.
  - Operation frequency - Higher frequency operation may cause darkening towards the center of the lamps. It is advisable to use at frequencies below 1200Hz.
  - High humidity conditions - For operation in humid environments, it is highly recommended to include a carbon print over the silver rear electrode. This combination is required for best functional performance.
- Compatibility
  - Micromax™ 7164 Electroluminescent Translucent Conductor is compatible with other members of the Micromax™ EL System, and should be used together with the recommended conductors, dielectrics, and phosphor. While Micromax™ has tested this composition with the specified materials and under 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

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quality and suitability of the composition for its intended application (s).

Processing

- Substrates
  - Print treated polyester film, printed circuit boards
- Screen types
  - Polyester: 77T-62
  - 20-25µm emulsion
- Printing
  - Semi-automatic or manual
  - The composition must be thoroughly mixed before use. This best achieved by slow, gentle, hand stirring with a clean, preferably plastic spatula for several minutes. Care must be taken to avoid air entrapment. Printing should be performed in a clean and 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 this temperature prior to commencement of printing.
- Layer thickness
  - 20-40µm (dry)
- Work life
  - > 1 hour
- Clean-up solvent
  - Ethylene Diacetate, Acetone
- Drying
  - Box oven: 130°C/5 min.
- Thinning
  - This composition is optimized for printing. 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 behavior of the material and its printing.
- Lamp Construction
  - Diagram 1-Build sequence (Reverse) a rear electrode is first printed onto a compatible base substrate. This is followed by 2 to 3 dielectric layers and a phosphor print. Translucent conductor Micromax™ 7164 is then overprinted to from the front electrode of the capacitor. The use of a clear protective encapsulant is strongly recommended.

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Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 7164 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Storage and shelf life

Containers may be stored in a clean, stable environment at room temperature (<25°C), with their lids tightly sealed. Storage in freezers (temperature <0°C) is NOT recommended as this could cause irreversible changes in the material. 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. Phosphor particles tend to settle out during static storage. Gentle jar rolling or turning the jars may be used to minimize setting of the phosphor component.

Safety and handling

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