Micromax™ 9903B

Microcircuit and Component Materials

99XXB Lead-Free Series-Heated Glass Compositions

Micromax™ 99XXB Series is provided for use in production of electrically heated backlinghts by the "direct" (unplated) method. The pastes can be blended with each other to obtain a wide range of eledtrical resistance.

Product benefits

- Dark fired color
- High green strength
- Lead, Cadmium, Nickel and Phthalate free*
- Low sensitivity to firing temoerature
- Supplied ready to print

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

Product information

Solvent or thinner	Micromax™ 9450	
Solid content	82.2 - 84.2	%
Silver content	77.8 - 79.6	%
Blend member or series	99XXBsrs	

Rheological properties

Viscosity	40 - 50[1]	Pa.s

[1]: Brookfield 0.5 x RVT #7 @20rpm

Application technique

Mask mesh	150 - 250	
Mask emulsion	15 - 25	µm
Drying temperature	125	°C
Recommended film thickness, fired	10 - 14	µm

Electrical properties

Surface resistivity	2.5 - 3.5[2]	mOhm per square

[2]: Rel. Range (±%) 15

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Storage and stability

Shelf life	6[3] months

[3]: in unopened containers, from date of shipment, at room temperature (<25°C)

Additional information

How to use

Processing

- Blendability
  - In order to obtain a specific resistance value, the pastes can be blended with each other. The Micromax™ 99XXB Series data can be used to determine blend recipes for specific heated window designs.
- Substrates
  - 2"x4" soda lime silicate glass, 4 mm thick.
- Printing
  - 156 mesh polyester screen, 20µm emulsion
  - Screen mesh size : 150-250 per inch
  - Emulsion thickness : 15-25 µm
  - Emulsion type : terpene resistant
  - Enamel compatibility : Air Dried and some UV
- Drying
  - Allow printed paste to dry to desired green strength at 125°C.
- Firing
  - 12 minute cycle, 5 zone belt furnace, peak temp of 640°C.
  - Average glass surface temp : 600-670°C over enamel
  - Average glass surface temp : 600-700°C over glass
  - Furnace atmosphere : Solvent and sulphite free
- Soldering
  - Burnish : Steel Wool or Fiberglass
  - Flux : Type R - rosin
  - Connector : Cu Clip or Braid pref. pretinned
- Adhesion test
  - Soldered copper clip, 70Pb/27Sn/3Ag, reflow with flame.

Properties

Composition and Typical Fired Properties

Test	Properties
Silver Content (%)	77.8 - 79.6
Density (g/cc)	3.8
Line Width (µm)	350-800

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Air side Color	Light-brown
Tin side Color	Dark-brown
Solder metallurgy 320-350°C/5 sec	60Pb/27Sn/3Ag/10Bi
Solder metallurgy 320-400°C/5 sec	70Pb/27Sn/3Ag
Adhesion (kg force) Typical for clip	50
SR (μΩ-cm)	3.2

Information in this datasheet shows anticipated typical physical properties for Micromax™ 99XXB 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 shlef 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).

Revised: 2023-03-14 Source: Celanese Materials Database

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.
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