

# Micromax™ 9615R

## Electronic Inks and Pastes

### Glass Encapsulant

High temperature glass encapsulant composition Micromax™ 9615R is intended for use as a final encapsulant to provide hermetic protection for screen printed capacitors. Micromax™ 9615R is applied to ceramic substrate by screen printing and fired in an air (oxidizing) atmosphere.

### Product benefits

- Red color dried film, colorless fired film.
- Coefficient of thermal expansion  $6.3 \times 10^{-6}$  in/in/°C (0-300°C)
- Hermetic fired film with excellent chemical durability
- Fired at a peak temperature of 850 °C
- Phthalate, cadmium, and nickel oxide free\*

\*Phthalate, cadmium, and nickel 'free' as used herein means that these are not intentionally added to the referenced product. Trace amounts however may be present.

### Product information

Solvent or thinner	Micromax™ 9180R
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### Rheological properties

Viscosity	170 - 230 <sup>[1]</sup> Pa.s
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[1]: Brookfield HBF, #5 spindle, 10 rpm, 25 °C

### Application technique

Mask mesh	200
Drying time	10 - 15 min
Drying temperature	150 °C
Theoretical coverage	83 cm <sup>2</sup> /g
Shrinkage, fired	12 %
Leveling time	5 - 10 min

### Storage and stability

Shelf life	6 <sup>[2]</sup> months
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[2]: in unopened containers, from date of shipment, at temperature <25 °C

### Additional information

How to use

### Processing

#### • Printing

- Encapsulant composition Micromax™ 9615R should be

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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. Care must be taken to avoid air-bubble entrapment. Printing should be carried out in a clean, well-ventilated area.

- Note : Optimum printing characteristics of Micromax™ 9615R 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.
- Screen printed with a 200 mesh stainless steel screen to obtain a fired thickness of 12µm. Two layers separately fired are recommended for maximum hermetic.

### • Drying

- Allow prints to level for 5-10 minutes at room temperature in a clean, draught-free environment, followed by drying for 10-15 minutes at 150 °C in a well ventilated oven or conveyor dryer.

### • Firing

- Fire in a well-ventilated belt or conveyor furnace in air with a 30-60 minute cycle with a peak of 850 °C held for 10 minutes. Care must be taken to ensure that any gases/ vapors from other chemicals/materials (e.g. halogenated solvents) do not enter the furnace muffle. It is also essential that the air supply to the furnace is clean, dry and free of contaminants. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle, and that no furnace exhaust gases enter the room.

## Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 9615R 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

Yield and performance will depend to a large degree on the care exercised during processing, particularly in screen printing. Scrupulous care should be taken to keep the encapsulant composition, printing screens and other tools free of metal contaminations. 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).

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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