

Micromax™ 4899R

Electronic Inks and Pastes

Solderable Silver Termination

Micromax™ 4899R is a solderable cadmium-free* and lead-free* silver termination for lead attachment to multilayer capacitors. This product has good solderability and high adhesion over a wide range of capacitor bodies. This termination may be employed on parts where platable terminations are not desired but which will be subjected to soldering conditions.

Product benefits

- Phthalate and cadmium and lead free*
- Good adhesion and solderability
- Dip even large size parts without a blot

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

Product information

Solvent or thinner	Micromax™ 4553
Solid content	74.5 - 76.5 ^[1] %
[1]: 750 °C	

Rheological properties

Viscosity	45 - 75 ^[2] Pa.s
[2]: Brookfield RVT, 14/6R, 10 rpm, 25 °C	

Storage and stability

Shelf life	6 ^[3] months
[3]: in unopened containers, from date of shipment, at temperature <25 °C	

Additional information

How to use

Processing

- **Applications**
 - Carrier plate-type dipping
- **Substrates**
 - Ceramic capacitor bodies
- **Dipping**
 - Micromax™ 4899R termination 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, or by slow jar rolling for 24 hours. Dipping should be

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carried out in a clean, well-ventilated area.

- Note: Optimum dipping characteristics of Micromax™ 4899R are generally achieved in the temperature range of 21 °C - 25 °C.

- **Thinning**

- Micromax™ 4899R is optimized for dipping and thinning is not normally required. Micromax™ 4553 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 behavior of the material and its dipping characteristics

- **Drying**

- 160 - 180 °C peak, 15 minute cycle on belt dryer

- **Firing**

- 850 °C for 10 minutes at peak, 40 minute cycle
- Care must be taken to ensure that any gases/vapors from other chemicals or 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. Micromax™ 4899R termination composition is fired on a 40 minute firing cycle to a peak of 850 °C, held for 10 minutes. Variations in the peak firing temperature and/or time at the peak temperature (e.g. 850-900 °C for 5-10 minutes at peak can be considered) may result in variations in the final fired properties. Care must be taken to assess the appropriate firing conditions for a particular body type.

Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ 4899R 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 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.

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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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