

MicromaxTM DA511

Electronic Inks and Pastes

Ag Sinter Paste For Power Semiconductor Die Attach

MicromaxTM DA511 silver sinter paste is a lead free die attach material designed for high reliability power semiconductor chip assembly.

Product benefits

- Pressure-assisted, low temperature sintered silver paste
- Applicable for SiC or high power Si power modules (~175°C)
- Stable at room temperature
- · Short sintering process time
- · Air or N2 atmosphere sintering
- Bond to Au, Ag and Cu
- Adjusted for off contact deposition (jetting)
- · Applicable for die top attach interconnect

Product information

Solvent or thinner Micromax™ 9450

Rheological properties

Viscosity 70 - 90^[1] Pa.s

[1]: Brookfield HAT, 10rpm, 25°C ± 0.2°C

Application technique

 $\begin{array}{ccc} \text{Mask emulsion} & 150 \ \mu\text{m} \\ \text{Drying time} & 5 - 30 \ \text{min} \\ \text{Drying temperature} & 80 - 120 \ ^{\circ}\text{C} \end{array}$

Thermal properties

Linear Coefficient of Thermal Expansion 20.6 E-6/K
Thermal conductivity 200 W/(m K)

Storage and stability

Shelf life 6^[2] months

[2]: in unopened containers, from date of shipment, at room temperature (<25 $^{\circ}$ C)

Printed: 2023-09-21 Page: 1 of 3

Revised: 2023-07-11 Source: Celanese Materials Database



MicromaxTM DA511

Electronic Inks and Pastes

Additional information

How to use

Design & compatibility

Compatibility

• Whilst MicromaxTM has tested this composition with the materials specified above and 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 quality and suitability of the composition for its intended application(s).

Processing

Screen types

o 150um thick metal stencil mask

Printing

- The composition should be thoroughly mixed and de-bubbled before use. This is best achieved by 1000rpm, 30sec mixing with a mixer. Care must be taken to avoid air entrapment during paste settlement on to the mask. Printing should be performed in a 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.

Thinning

 MicromaxTM DA511 composition is optimized for screen printing and thinning is not normally required. Use the MicromaxTM recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or the use of a nonrecommended thinner may affect the rheological behavior of the material and its printing characteristics.

Drying

 Allow prints to level at room temperature, then dry in a wellventilated oven or conveyor dryer.

Chip mounting

• Place the chip on top of dried layer.

Chip mount temp: 150°C to 175°CChip mount pressure: 1MPa to 5MPa

o Chip mount time: 5sec to 15sec

Printed: 2023-09-21 Page: 2 of 3

Revised: 2023-07-11 Source: Celanese Materials Database



MicromaxTM DA511

Flectronic Inks and Pastes

Sintering

• Sintering should be held under pressure with die bonder.

Sintering temp: 250°C to 280°C
Sintering pressure: >10MPa
Sintering time: 1min to 15min

Properties

 Information in this datasheet shows anticipated typical physical properties for MicromaxTM DA511 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 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).

Printed: 2023-09-21 Page: 3 of 3

Revised: 2023-07-11 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 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, pr

© 2023 Celanese or its affiliates. All rights reserved. Celanese®, registered C-ball design and all other trademarks identified herein with ®, TM, SM, unless otherwise noted, are trademarks of Celanese or its affiliates. Fortron is a registered trademark of Fortron Industries LLC. KEPITAL is a registered trademark of Korea Engineering Plastics Company, Ltd.