

Micromax™ ALN44

Electronic Inks and Pastes

Lead Free Dielectric

Micromax™ ALN44 is a lead free*, thick film dielectric paste and is an integral element of the system developed for use on aluminum nitride (AlN) substrates. It is designed primarily for cross-over applications. It has also been shown effective for multi-layer applications.

* Lead 'free' as used herein means that this is not intentionally added to the referenced product. Trace amount however may be present.

Product benefits

- Compatible with Micromax™ ALNxx conductors
- 3-print, hermetic dielectric film
- High resistance to E.M.F. blistering and shorting
- Robust electrical and mechanical properties

Product information

Colour	Blue
Solvent or thinner	Micromax™ 4553

Rheological properties

Viscosity	225 - 300 ^[1] Pa.s
-----------	-------------------------------

[1]: Brookfield 2xHAT, UC&SP, SC4-14/6R, 10 rpm, 25°C ± 0.2°C

Application technique

Mask mesh	280 - 325
Drying time	10 - 15 min
Drying temperature	150 °C
Theoretical coverage	55 - 65 ^[2] cm ² /g
Recommended film thickness, fired	35 - 45 µm
Leveling time	5 - 10 min

[2]: based on a fired thickness of 30µm

Electrical properties

Dielectric Constant	5.5 - 7 ^[3]
Dissipation Factor	≤0.5 ^[4] %
Insulation Resistance, DC	≥1E12 ^[6] Ohm
Breakdown Voltage	≥700 ^[7] V

[3]: at 1 MHZ

[4]: at 1 MHZ, wet

[5]: 100 VDC at recommended thickness

[6]: v

Micromax™ ALN44

Electronic Inks and Pastes

[7]: at 35µm

Storage and stability

Shelf life

6^[8] months

[8]: in unopened containers, from date of shipment, at temperature <25°C

Additional information

How to use

Processing

- **Substrates**
 - Properties are based on tests of the dielectric on aluminum nitride substrates. Substrates of other compositions and from various manufacturers may result in variations in performance properties.
- **Printing**
 - Printing should be carried out in a clean and well-ventilated area. The combined fired thickness of the dielectric should be 40±5µm. This can generally be obtained by printing the individual layers with a 280-325 mesh stainless steel screen.
- **Drying**
 - Allow prints to level for 5-10 minutes at room temperature. Then dry for 10-15 minutes at 150°C.
- **Firing**
 - Fire in well-ventilated moving conveyor furnace, in air with a 30-minute cycle, to a peak temperature of 850°C.

Properties

- Information in this datasheet shows anticipated typical physical properties for Micromax™ ALN44 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.

Safety and handling

For safety and handling information pertaining to this product, read Safety Data

Micromax™ ALN44

Electronic Inks and Pastes

Sheet (SDS).

Printed: 2023-09-21

Page: 3 of 3

Revised: 2023-06-13 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.

© 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.