

# Micromax™ BQ226

## Electronic Inks and Pastes

### Carbon Conductor Composition

The Biomedical Quality (BQ) Series is designed for use in a variety of different applications including, medical monitoring, diagnostics, drug delivery and electro-chemical and biological sensing. The series includes conductive Ag, Ag/C, and C for electrical signal processing, Ag/AgCl for multi-electrode (working/counter/reference) configurations, dielectric compositions for electrical isolation, and a range of novel materials including Pt, Au, Pt/C, and Zn based compositions designed for enhancing sensor performance.

Micromax™ BQ226 is a screen printable carbon composition designed for use in bio-sensors requiring a carbon composition with higher electrical conductivity.

### Product characteristics

- High abrasion resistance
- High stability
- Low resistivity carbon
- Good activity in biomedical applications.

### Product information

Solvent or thinner	Micromax™ 8260
Solid content	32.5 - 36.5 <sup>[1]</sup> %
[1]: 150 °C	

### Rheological properties

Viscosity	25 - 40 <sup>[2]</sup> Pa.s
[2]: Brookfield RVT, UC&SP, SC4-14/6R, 10 rpm, 25 °C ± 0.2 °C	

### Application technique

Mask mesh	48 - 77 <sup>[3]</sup>
Drying time	10 - 15 <sup>[4]</sup> min
Drying temperature	130 <sup>[4]</sup> °C
Theoretical coverage	300 <sup>[5]</sup> cm <sup>2</sup> /g
Recommended film thickness, dried	9 - 10 <sup>[6]</sup> μm

[3]: Screen Types: Polyester, 48Y-77Y

[4]: box oven

[5]: ~300, dependent on screen mesh size and type

[6]: 48Y-77Y, polyester

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### Electrical properties

Surface resistivity  $\leq 30000^{[7]}$  mOhm per square

[7]: at 25 $\mu$ m thickness

### Storage and stability

Shelf life 3<sup>[8]</sup> months

[8]: in unopened containers, from date of shipment, at temperature between 5-30°C

### Additional information

How to use

### Design & compatibility

#### • Compatibility

- Whilst Micromax™ has tested this composition, 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

- Polyester or stainless steel

#### • Printing

- Reel to reel, semi-automatic and manual
- The composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean, preferably plastic spatula for several minutes. Care must be taken to avoid air entrapment. 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 printing.

#### • Typical circuit line thickness

- Printed with polyester mesh type 77-48Y
- 9 - 10  $\mu$ m

#### • Work life

- Greater than 1 hour

#### • Thinning

- Micromax™ BQ series compositions are optimized for their

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intended application and do not normally require thinning. Use the Micromax™ recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or a non recommended thinner may affect the rheological behavior of the material and its printing characteristics.

- **Clean-up solvent**
  - Ethylene diacetate or Methyl propasol acetate
- **Drying**
  - Box oven : 130 °C for 10-15 minutes
  - IR oven : 140 °C for 1-1.5 minutes
  - Dry in a well ventilated box oven, belt or conveyor furnace. Air flows and extraction rates should be optimized to ensure the complete removal of solvent from the paste.

### Properties

#### Exemplary Physical & Electrical Properties

Test	Properties
Resistivity after Flex (150sec after crease 180 °C) ( $\Omega$ /sq/25 $\mu$ m)	50
Abrasion Resistance, Pencil Hardness (ASTM D3363-74) [H]	3

Information in this datasheet shows anticipated typical physical properties for Micromax™ BQ226 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 may be stored in a clean, stable environment at room temperature (between 5 °C – 30 °C) with their lids tightly sealed. Storage in high temperature (>30 °C) or in freezers (temperature <0 °C) is NOT recommended as this could cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5 °C – 30 °C) is 3 months from date of shipment.

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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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