

# Micromax™ 5028

## Electronic Inks & Pastes

### PRODUCT DESCRIPTION

#### Silver Conductor

Micromax™ 5028 silver conductor is used to fabricate low-voltage circuitry, especially on flexible substrates. This composition is particularly suited for applications requiring high conductivity and/or fast curing. It can be used with reel-to-reel, semiautomatic, and manual printers, and offers excellent residence time on the screen.

#### Product benefits

- Excellent conductivity

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### PRODUCT INFORMATION

| General Properties                       | Value Unit                |
|------------------------------------------|---------------------------|
| Application                              | Membrane switch conductor |
| Solvent or thinner                       | Micromax™ 3610            |
| Solid content <sup>1</sup>               | 69 to 71 %                |
| Maximum Service Temperature <sup>2</sup> | 110 °C                    |

### TECHNICAL DATA

| Rheological Properties | Value Unit    |
|------------------------|---------------|
| Viscosity <sup>3</sup> | 15 to 30 Pa.s |

| Application Technique    | Value Unit |
|--------------------------|------------|
| Mask mesh <sup>4</sup>   | 325        |
| Drying time <sup>5</sup> | 6 min      |

| Application Technique             | Value                | Unit               |
|-----------------------------------|----------------------|--------------------|
| Drying temperature <sup>6</sup>   | 120 to 130           | °C                 |
| Theoretical coverage <sup>7</sup> | 230 to 320           | cm <sup>2</sup> /g |
| Recommended film thickness        | 8 to 10              | µm                 |
| Mechanical Properties             | Value                | Unit               |
| Adhesion <sup>8</sup>             | no material transfer | class              |
| Electrical Properties             | Value                | Unit               |
| Resistivity <sup>9</sup>          | ≤12                  | mOhm per square    |
| Storage and Stability             | Value                | Unit               |
| Shelf life <sup>10</sup>          | 6                    | months             |

<sup>1</sup>750°C

<sup>2</sup>on 5-mil Polyester Film

<sup>3</sup>Brookfield HBT, 10 rpm, #14, 25°C

<sup>4</sup>Screen Types: Stainless steel

<sup>5</sup>box oven

<sup>6</sup>box oven

<sup>7</sup>Dependent on print thickness

<sup>8</sup>3M Scotch Tape #600

<sup>9</sup>at 25µm

<sup>10</sup>in unopened containers, from date of shipment, stable environment at room temperature between 5°C - 30°C

## PROCESSING GUIDELINES

### Substrates

Polyester, paper, epoxy glass

### Screen types

Polyester, stainless steel

### Printing

Reel-to-reel, semi-automatic, manual

### Typical circuit line thickness

Printed with 325-mesh stainless steel screen

8 - 10 µm

### Work life

> 1 hours

### Clean-up solvent

Ethylene glycol or Diacetate

### Drying

Box oven: 120 - 130°C for 6 minutes

Reel-to-reel: 140°C for 1 - 1.5 minutes

Dry and cure in a well-ventilated oven or conveyor dryer where the exhaust meets environmental regulations.

### Typical Physical Properties on 5-mil Polyester Film

| Test                                                                                 | Properties          |
|--------------------------------------------------------------------------------------|---------------------|
| Resistivity after Flex (mΩ/sq at 25.4μm)<br>15 sec after test Crease (180°, 1 cycle) | < 100               |
| Abrasion Resistance, Pencil Hardness (ASTM D3363-74) [H]                             | ≥ 2                 |
| Soldering                                                                            | Not Recomm<br>ended |
| Change in Physical Properties after Environmental Tests*                             | Insignificant       |
| Change in Electrical Properties after Environmental Tests* (%)                       | < 10                |

\* Environmental Tests

- Thermal Shock (+85°C to -40°C, 30 min. each, 5 cycles)
- Dry Heat (+85°C, 20 days)
- Humidity (+60°C, 95%RH, 1000 hr) (MIL Std 202E, method 103, cond. A)
- Salt Spray (+35°C, 5% salt, 10 days) (ASTM B117)
- Silver Migration (1 V DC/25.4μm gap, +40°C, 90% RH, 500 hr, tested on 1016μm and 1778μm gaps)
- Sulfate Dioxide (+45°C, 90% RH, 500 hrs in a 9-liter chamber containing 500 mg of sulfur)

Information in this datasheet shows anticipated typical physical properties for Micromax™ 5028 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 between 5°C - 30°C. Shelf life of material in unopened containers is 6 months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Storage conditions on the product data sheets are intended to represent long-term material storage recommendations and not a shipping or temperature-at-receipt requirement.

Transportation: Under normal shipping conditions, without temperature control, Micromax™ products are not expected to exhibit a change in quality or fitness for use. Should extraordinary

events result in extended transportation periods, Micromax™ recommends customers confirm products remain suitable for the intended application.

### Safety and handling

For safety and handling information pertaining to this product, read Safety Data Sheet (SDS).

## SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use.

**Safety Data Sheets are available.**

## WASTE TREATMENT

Prior to using any recommendations or suggestions for waste treatment, the user is required to know the appropriate local/state/federal regulations for on-site or off-site treatment which may require permits. If there is any conflict regarding our recommendations, local/state/federal regulations take precedence.

## CONTACT INFORMATION

[www.macdermidalpha.com](http://www.macdermidalpha.com)

| North America                                             | Europe                                                                                                                | Asia                                                                    |
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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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