

# Micromax™ 6002F

## Electronic Inks & Pastes

### PRODUCT DESCRIPTION

#### Copper Conductor Composition

Micromax™ 6002F is a high conductivity copper conductor, which is printed on 96% alumina substrates and fired at 600°C in a Nitrogen atmosphere. It is particularly suitable for applications requiring through hole printing and soldering. It is also used to print thick tracks with a good resolution.

#### Product benefits

- Excellent Thermal and Electrical conductivity
- Good solderability
- Through hole printable
- Cadmium and nickel free

\*Cadmium, 'free' as used herein means that these are not intentionally added to the referenced product. Trace amounts however may be present.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### PRODUCT INFORMATION

| General Properties | Value Unit       |
|--------------------|------------------|
| Application        | Copper conductor |
| Solvent or thinner | Micromax™ 7502   |
| Solid content      | 86 to 89 %       |

### TECHNICAL DATA

| Rheological Properties | Value Unit      |
|------------------------|-----------------|
| Viscosity <sup>1</sup> | 200 to 300 Pa.s |

| Application Technique | Value Unit |
|-----------------------|------------|
| Mask mesh             | 200 to 325 |

| Application Technique             | Value    | Unit               |
|-----------------------------------|----------|--------------------|
| Mask emulsion                     | 11 to 13 | µm                 |
| Drying temperature <sup>2</sup>   | 120      | °C                 |
| Theoretical coverage <sup>3</sup> | 35 to 40 | cm <sup>2</sup> /g |
| Recommended film thickness        | 16 to 20 | µm                 |
| Leveling time                     | 2 to 5   | min                |
| Electrical Properties             | Value    | Unit               |
| Resistivity <sup>4</sup>          | ≤4.4     | mOhm per square    |
| Storage and Stability             | Value    | Unit               |
| Shelf life <sup>5</sup>           | 6        | months             |

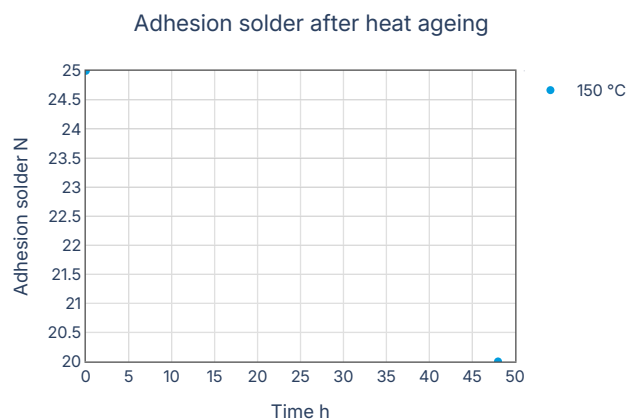
<sup>1</sup>Brookfield HBT, UC&S, 10 rpm, 25°C

<sup>2</sup>in air

<sup>3</sup>at a fired thickness of 30µm

<sup>4</sup>at 16µm fired thickness

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



## PROCESSING GUIDELINES

### Substrates

Substrates of different compositions and from various manufacturers may result in variations in performance properties.

### Printing

200-325 mesh stainless steel screen with a 11-13µm emulsion build up.

The composition should be thoroughly mixed before use. This is best achieved by slow, gentle, hand stirring with a clean burr-free spatula (flexible plastic) for < 1 minute. Care must be taken to avoid air entrapment.

Printing should be performed in a clean and well-ventilated area. 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, at this temperature prior to commencement of printing.

## Drying

Allow prints to level for 2-5 minutes at room temperature, then dry in a well-ventilated oven or conveyor dryer.

Dry at 120°C in air or 150°C in N<sub>2</sub>.

## Firing

600°C peak held for 5 minutes on 30 minutes cycle in a nitrogen atmosphere (the oxygen level should be between 5-10 ppm).

The dried prints must be fired in a conveyor furnace in a nitrogen atmosphere. The oxygen levels in the nitrogen supply and firing section of the furnace should be 2-10 ppm. The furnace must be exhausted into an efficient factory extraction system. Gas flow and extraction rates must be adjusted to avoid formation of oxidizing conditions within the muffle and to ensure no exhaust gases enter the room. The recommend profile is shown in Figure 1.

## Properties

Information in this datasheet shows anticipated typical physical properties for Micromax™ 6002F based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

|                        |          |
|------------------------|----------|
| Solder Adhesion        |          |
| Initial                | >/= 25 N |
| Aged (48 hrs at 150°C) | >/= 20 N |

Information in this datasheet shows typical physical properties for Micromax™ 9922.

## 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 & 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)

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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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