

# LOCTITE M 4100 MINICO E&C

September 2014

## PRODUCT DESCRIPTION

LOCTITE M 4100 MINICO E&C provides the following product characteristics:

<b>Technology</b>	Thermosetting
<b>Appearance</b>	Silver
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• Conductive</li> <li>• Screen printable</li> <li>• One component</li> <li>• Electroless nickel plateable</li> </ul>
<b>Cure</b>	Heat cure
<b>Application</b>	Conductive Ink
<b>Filler Type</b>	Silver
<b>Typical Assembly Applications</b>	Interconnect and Crossovers
<b>Key Substrates</b>	FR-2, FR-3, FR-4, FR-5, CEM-1, CEM-3, Copper and Ceramic

LOCTITE M 4100 MINICO E&C electroless nickel plateable conductive polymer is designed as a terminator where the M 2000 RS MINICO E&C polymer resistor series has been applied. This material is designed to be applied using standard screen printing methods.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Solids Content, %	78
Viscosity, Brookfield - HBT, mPa·s (cP)	45
Density, kg/cm <sup>3</sup>	2,800
Shelf Life @ 18 to 25°C, days:	
From date of qualification in original seal	365
Theoretical coverage, m <sup>2</sup> /kg:	
Wet product @ 10 µm dry coating thickness	14

## TYPICAL SCREEN PRINTING PROCESS

<b>Emulsion Thickness</b>	
Direct or indirect emulsion µm	25 to 50
<b>Printing Equipment Type</b>	
Manual	
Semi-automatic	
<b>Recommended Screen Type</b>	
Monofilament polyester & Stainless Steel threads/cm	61 to 77
<b>Recommended Squeegee</b>	
Polyurethane, Shore Hardness	60 to 75
Speed (not to exceed), cm/s	10

## TYPICAL DRYING CYCLE

5 minutes @ 120 °C:

## TYPICAL CURING PERFORMANCE

### Convection Box Oven

20 minutes @ 200°C

### Infrared Heat Source

2 to 6 minutes @ 200°C

These cure schedules are a general guideline for additive circuitry. Other cure schedules can be utilized depending on laminates and processing parameters.

The above cure profile is a guideline recommendation. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

Cured as coating on FR4

### Physical Properties :

Adhesion, grade 5B

### Electrical Properties:

Sheet Resistivity @ 25µm, ohms/sq <0.04

## GENERAL INFORMATION

**For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).**

## DIRECTIONS FOR USE

1. LOCTITE M 4100 MINICO E&C should be thoroughly stirred prior to use. Avoid rapid stirring as this causes air entrapment.
2. Should thinning become necessary, dilute (not to exceed) 0.5% by weight with Electrodag Diluent 2.

## Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Store in a cool, well ventilated area.

## Optimal Storage : 18 to 25 °C

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

**Not for product specifications**

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

**Conversions**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} = \text{N/mm}^2$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

**Disclaimer****Note:**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

**In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:**

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

**In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

**In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada, Inc. the following disclaimer is applicable:**

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

**Trademark usage**

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 0.1