

# LOCTITE M 4100LR E&C

March 2016

## PRODUCT DESCRIPTION

LOCTITE M 4100LR 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>• One component</li> <li>• Low resistivity</li> <li>• Processing Ease</li> <li>• Printable on rigid substrates</li> <li>• Screen printable for reduction of production time</li> </ul> |
| <b>Cure</b>             | Heat cure and IR cure                                                                                                                                                                                                         |
| <b>Application</b>      | Conductive Ink                                                                                                                                                                                                                |
| <b>Key Substrates</b>   | FR-2, FR-3, FR-4, FR-5, CEM-1, CEM-3 and Ceramic                                                                                                                                                                              |

LOCTITE M 4100LR E&C one component, low resistance, silver filled, conductive polymer is designed as a terminator where LOCTITE M 2000RS E&C polymer resistor series has been applied. This material can also be used in interconnect and crossover applications.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP):

|                             |        |
|-----------------------------|--------|
| Spindle 14, speed 10 rpm    | 45,000 |
| Solids Content by Weight, % | 77     |
| Density, g/cm <sup>3</sup>  | 2.7    |

Theoretical coverage @ 25µm:

|                    |      |
|--------------------|------|
| cm <sup>2</sup> /g | 113  |
| m <sup>2</sup> /l  | 26.1 |
| m <sup>2</sup> /kg | 9.88 |

Shelf Life @ 25 °C (from date of qualification in original seal), days 365

## TYPICAL SCREEN PRINTING PROCESS

Screen mesh, minimum mesh opening 39%:

|                                                         |          |
|---------------------------------------------------------|----------|
| Stainless Steel Mesh                                    | 200      |
| Polyester screen                                        | 196      |
| Squeegee Hardness, durometer                            | 70       |
| Squeegee Speed (not to exceed), cm/second               | 10       |
| Squeegee pressure, initial, Kg                          | 3        |
| Snap-off, snap-off determined by PCB size, initial, mil | 60       |
| Wet Film Thickness, µm                                  | 30 to 40 |
| Cured Film Thickness, µm                                | 18 to 24 |
| Screen Emulsion Thickness:                              |          |
| Direct build up, mil                                    | 0.5      |
| Indirect laminate, mil                                  | 1.5      |

## TYPICAL DRYING CYCLE

5 minutes @ 80 °C in Convection oven

## TYPICAL CURING PERFORMANCE

### Percent Volatiles

VOC, g/l 407

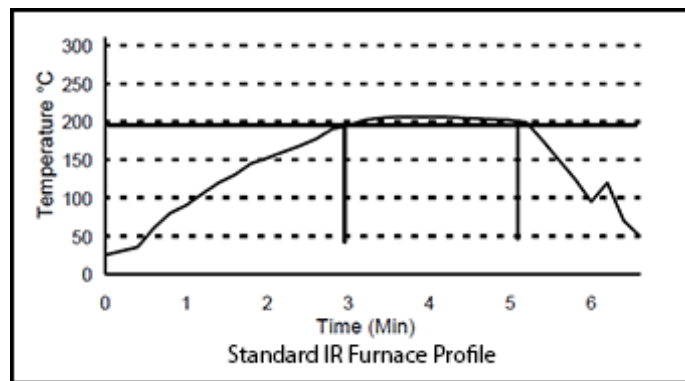
### Convection Box Oven

20 minutes @ 200°C

45 minutes @ 165°C minimum cure

### Infrared Heat Source

2 minutes @ 200°C



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

After application

### Electrical Properties

Resistivity, 1 mil thickness, max, ohms/sq 0.025

Resistivity change in solder, % Max:

6 seconds @ 250°C

Solvent Resistance 5  
MEK wipe resistant

## GENERAL INFORMATION

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

## DIRECTIONS FOR USE

1. Some separation of components is common during shipping and storage. It is recommended that the contents of the shipping container be thoroughly mixed prior to use.
2. Use Glycol Ether OB, Diethylene Glycol Monobutyl Ether or Glycol Butyl Ether Alcohol, not to exceed 1% of weight. For clean-up, use standard screen cleaners.

**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 : 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**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{kV/mm} \times 25.4 = \text{V/mil}$

$\text{mm} / 25.4 = \text{inches}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N/mm} \times 5.71 = \text{lb/in}$

$\text{psi} \times 145 = \text{N/mm}^2$

$\text{MPa} = \text{N/mm}^2$

$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$

$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$

$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$

$\text{mPa}\cdot\text{s} = \text{cP}$

**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 Corporation, 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 1**