

# LOCTITE<sup>®</sup> ECCOBOND UF 3832

February 2023

#### PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> ECCOBOND UF 3832 provides the following product characteristics:

Technology	Ероху
Appearance	Black liquid
Cure	Heat cure
Product Benefits	<ul> <li>Fast cure</li> <li>One component</li> <li>Halogen free compliant</li> <li>Fast flow at preheat temperature</li> <li>Low moisture sensitive</li> <li>Stable electrical performance under standard Surface Insulation Resistance (SIR)</li> </ul>
Application	Electronic Encapsulants, Circuit board underfill
Key Substrate	PCB

LOCTITE<sup>®</sup> ECCOBOND UF 3832 underfill is formulated for assembly applications requiring good flowability at pre-heat temperature. This material is specially designed for use on big chips. It is capable of underfilling devices with 50 µm geometries, providing a uniform and void-free encapsulant underfill, maximizing the device's temperature cycling capability, distributing stress away from solder connects.

#### TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield CP51, 25°C, mPa·s (cP):	
@ Speed 20 rpm	4,184
Thixotropic Index (2/20 rpm)	1.1
Flow Rate @ 60°C, seconds:	
10 mm travel, <1.5 cm gap, on glass slide	56
Specific Gravity, g/cm <sup>3</sup>	1.35
Work Life @ 25°C, 7% change in viscosity, hours	24
Shelf Life @ -40°C, days	270

#### TYPICAL CURING PERFORMANCE Cure Schedule

10 minutes @ 130°C or 7 minutes @ 150°C

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and specific application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

### TYPICAL PROPERTIES OF CURED MATERIAL

#### Physical Properties

Coefficient of Thermal Expansion, ppm/°C:	
Below Tg	36
Above Tg	136
Glass Transition Temperature, °C	117
Storage Modulus, DMA , N/mm <sup>2</sup>	5,200

#### **Electrical Properties**

Surface Insulation Resistance >240 85°C/85% RH, 0.3 pitch, no dendrite observed, hours

#### Adhesion Properties

Sample cured 10 minutes @ 130°C	
Die Shear Strength :	
3 x 3 mm Si die on FR4, kg-f	51

#### **GENERAL INFORMATION**

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

#### THAWING:

- 1. Allow container to reach room temperature before use.
- 2. After removing from the freezer, set the syringes to stand vertically while thawing.
- 3. Thaw for 4 hours (6, 12, or 20oz cartridges) prior to use.

#### DIRECTIONS FOR USE

- 1. While it is not essential, the underfill area should be cleaned of contaminants and obstructions to optimize the speed and quality of the underfill
- Preheat assembly to between 70°C and 100°C. Higher temperatures reduce underfill times. Preheat assembly to 100°C for best results.
- 3. Use the graph below to determine the estimated underfilling time for your desired assembly preheat



- 4. Dispense a bead of the underfill using a syringe fitted with a 21 gauge needle (or larger) on one (line) or two sides (L-Shape) of the device perimeter
- 5. Syringe tip heating is not needed, but can be used
- Very large devices may require multiple beads of underfill, but for most no second or 'fillet pass' is required
- Because of its low viscosity and outstanding wetting characteristics, LOCTITE<sup>®</sup> ECCOBOND UF 3832 is designed to 'self-fillet' the opposite sides of the device

#### Underfill time vs Preheat Temp:



**Note:** Use for estimate only. Data generated on Glass to Glass slide assembly with 180 micron gap, time is to flow a distance of 1 cm.

#### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local Henkel representative for assistance and recommendations on the specifications of this product.

#### STORAGE

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

## Optimal Storage: -40°C. Storage below -40°C or above -40°C can adversely affect product properties.

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 Henkel Representative.

#### Conversions

 $(^{\circ}C \ge 1.8) + 32 = ^{\circ}F$ kV/mm  $\ge 25.4 =$  V/mil mm / 25.4 = inches N  $\ge 0.225 =$  lb/F N/mm  $\ge 5.71 =$  lb/in N/mm<sup>2</sup>  $\ge 145 =$  psi N/mm  $\ge 0.738 =$  lb·in N·m  $\ge 0.738 =$  lb·ft N·mm  $\ge 0.142 =$  oz·in mPa·s = cP

#### Disclaimer

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, 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