

LOCTITE ECCOBOND UF 3811

August 2019

PRODUCT DESCRIPTION

LOCTITE ECCOBOND UF 3811 provides the following product characteristics:

Technology	Epoxy
Appearance	Black liquid
Cure	Heat cure
Product Benefits	• One component • Room temperature flow capability • Halogen free • Reworkable • Good thermal cycling reliability • Stable electrical performance under standard Surface Insulation Resistance (SIR)
Application	Underfill, Encapsulation
Typical Package Application	Chip scale packages and BGA

LOCTITE ECCOBOND UF 3811 reworkable epoxy underfill is designed for CSP and BGA applications. This low viscosity material is formulated to flow at room temperature with no additional preheating required. It cures quickly at moderate temperatures to minimize stress to other components. When cured, this material has a high glass transition temperature while maintaining flexibility in order to protect solder joints during thermal cycling and drop testing.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Physica CP50-1, 25 °C, mPa·s (cP):	
Speed 20 rpm	354
Specific Gravity	1.16
Pot Life @ 25°C, days	3
Shelf Life @ -20°C, days	365

Flash Point - See SDS

TYPICAL CURING PERFORMANCE

Cure Schedule

60 minutes @ 100°C
30 minutes @ 110°C
10 minutes @ 130°C
7 minutes @ 150°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

Physical Properties

Coefficient of Thermal Expansion, , TMA:	
Below Tg, ppm/°C	61
Above Tg, ppm/°C	190
Glass Transition Temperature (Tg) by TMA, °C	124
Storage Modulus, DMA, 3-point	N/mm ² 2,445
bending @ 25°C	(MPa) (2,445)
	(psi) (354,617)
Thermal Conductivity, W/(m-K)	0.23

Electrical Properties

Surface Insulation Resistance , after 168 hours, 1×10 ¹⁰
60°C/90% RH, ohms

TYPICAL ENVIRONMENTAL RESISTANCE

Outgassing Properties

Outgassing , NASA Outgassing:	
TML, %	0.45
CVCM, %	0.04
WVR, %	0.31

GENERAL INFORMATION

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

STORAGE:

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

Optimal Storage : -20 °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.

Conversions

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

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