Technical Data Sheet

LOCTITE ECCOBOND 3003

August 2012

PRODUCT DESCRIPTION

LOCTITE ECCOBOND 3003 provides the following product characteristics:

Technology	Silicone
Appearance	gray
Cure	Heat cure
Product Benefits	• Low modulus • Thermally conductive • Ultra-low moisture absorption • Chemical compatibility with silicone gels • Good adhesion
Application	Die attach

LOCTITE ECCOBOND 3003 adhesive is designed for lid attach in flip chip BGA applications. The combination of product features result in superior flip chip BGA reliability. This material is sensitive to amines, phosphorus, sulfur and tin containing components. This material needs to be isolated from uncured epoxy-based resins as interaction will inhibit curing.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Thixotropic Index (0.5/5 rpm)	2.5
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Speed 5 rpm	35,000
Work Life @ 25°C, hours	10
Shelf Life @ -40°C, days	365
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

90 minutes @ 100°C + 60 minutes @ 150°C

Alternative Cure Schedule 1

30 minute ramp to 175°C + 30 minutes @ 175°C

Alternative Cure Schedule 2

60 minutes @ 150°C

The above cure profiles are guideline recommendations. 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 Linear Thermal Expansion, ppm/ºC:		
Below Tg		39
Above Tg		162
Glass Transition Temperature (Tg) by TMA, °C		49
Thermal Conductivity, W/(m-K)		1
Flexural Modulus:		
@ -65 °C	N/mm² (psi)	9,655 (1,400,000)
@ 25 °C	N/mm² (psi)	4,000 (580,000)
@ 150 °C	N/mm² (psi)	69 (10,000)
@ 250 °C	N/mm² (psi)	103 (15,000)
Extractable Ionic Content, @ 100°C:		
Chloride (Cl-)		≤10
Sodium (Na+)		≤10
Potassium (K+)		≤10
Moisture Absorption @ Saturation, wt.% @ 85°C/85°RH		0.2
Weight Loss @ 300ºC, %		0.55

Electrical Properties

Dielectric Constant @ 1MHz	4.0
Dielectric Constant @ 1GHz	3.6

TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength vs Temperature:

3 x 3 x 0.38 mm bare Si die on 0.2 mm thick Ni-plated Cu LF, kg-f:

@ 25ºC	13.5
@ 240ºC	2.0

7.6 x 7.6 x 0.38 mm bare Si die on 0.52 mm thick Ni-plated Cu LF, kg-f:

@ 25ºC	66
@ 240ºC	14.3

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. DO NOT open the container before contents reach 22°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
4. DO NOT re-freeze. Once thawed to 22°C, the adhesive should not be re-frozen.

DIRECTIONS FOR USE

1. The recommended needle size for use is 18 to 20 gage.

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.

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 minus (-)40 °C or greater than minus (-)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 Technical Service Center or Customer Service Representative.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

Disclaimer

Note:

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Reference 1