

# LOCTITE ECCOBOND FP4323

April 2015

## PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4323 provides the following product characteristics:

<b>Technology</b>	Epoxy
Appearance, Resin (Component A)	Black
Appearance, Hardener (Component B)	beige
Appearance (Mixture)	Black
Product Benefits	<ul style="list-style-type: none"> <li>• Low CTE for improved thermal cycling</li> <li>• High purity</li> <li>• Thixotropic</li> <li>• Excellent moisture resistance</li> <li>• Excellent chemical resistance</li> </ul>
Filler Weight, %	65
Filler Type	Silica
Mixing Ratio, by weight Component A: Component B	100 : 100
<b>Cure</b>	Heat cure
<b>Application</b>	Encapsulant - glob top
Typical Assembly Applications	Chip-on-board and Plastic PGA applications
Substrates	Plastic

LOCTITE ECCOBOND FP4323 liquid epoxy encapsulant glob top is designed with flow capabilities that allows encapsulation without flowing beyond the chip.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Part A Properties

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 2 rpm	172,500
Spindle 7, speed 20 rpm	115,000
Specific Gravity @ 25 °C	1.7
Shelf Life @ 25°C, months	12
Flash Point - See SDS	

### Part B Properties

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 2 rpm	250,000
Spindle 7, speed 20 rpm	72,500
Specific Gravity @ 25 °C	1.7
Shelf Life @ 25°C, months	12
Flash Point - See SDS	

## Mixed Properties

Mixed Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 2 rpm	220,000
Spindle 7, speed 20 rpm	100,000
Specific Gravity @ 25 °C	1.67
Gel Time @ 121°C, minutes	11
Pot Life @ 25 °C, days	2
Shelf Life @ -40 °C, months	9
Work Life @ 25 °C, hours	48
Flash Point - See SDS	

## TYPICAL CURING PERFORMANCE

### Recommended Cure Schedule

4 hours @ 150°C or  
1 hour @ 170°C

### Alternative Cure Schedule

2 hours @ 125°C + 4 hours @ 150°C

### Substrate Temperature

Temperature, °C 90

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.

A two-step cure will minimize stress.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Coefficient of Thermal Expansion ASTM D-3386, ppm/°C:	
Below Tg (40 to 120°C)	28
Glass Transition Temperature (Tg) by TMA, °C	174
Thermal Conductivity, W/(m·K)	0.63
Shore Hardness, ISO 868, Durometer D	97
Linear Shrinkage, %	0.43
Extractable Ionic Content, ppm:	
Chloride (Cl-)	20
Sodium (Na+)	20
Potassium (K+)	20
Water Absorption, ISO 62, %:	
8 hours @ 100°C	0.25

### Electrical Properties

Dielectric Constant / Dissipation Factor, IEC 60250:	
1kHz	3.7 / 0.004
100 MHz	3.59 / 0.085
1 GHz	3.44 / 0.075
Volume Resistivity, IEC 60093, Ω·cm	6.2×10 <sup>14</sup>
Surface Resistivity, IEC 60093, Ω	1.6×10 <sup>14</sup>

## GENERAL INFORMATION

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

**This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be used with chlorine or other strong oxidizing materials.**

## DIRECTIONS FOR USE

1. For best results, dispense onto substrate warmed to 90°C.
2. LOCTITE ECCOBOND FP4323 may settle upon storage. Each container must be thoroughly mixed before combining.
3. Mix Part A and Part B separately for about 5 to 10 minutes on a standard paint shaker to ensure complete dispersion of the filler.
4. Stir with a large spatula to check for lumps.
5. Cold storage will minimize filler settling.
6. Part B may form a crust if exposed to moist air for an extended period of time. Keep in a well sealed container. For best results, do not use Part B which contains this crust caused by moisture contamination.
7. Thorough mechanical mixing of Part A and Part B together is required for best results. Hand mixing alone is not recommended.

## 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 (Mixed): -40 °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

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

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

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

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

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

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

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

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

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

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

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

## 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.

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