

# LOCTITE ECCOBOND FP4460

November 2015

## PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4460 provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Black
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• High purity</li> <li>• Low stress</li> <li>• Improved work life</li> <li>• High temperature performance</li> <li>• Excellent chemical resistance</li> <li>• Excellent moisture resistance</li> <li>• High flow</li> </ul>
<b>Cure</b>	Heat cure
<b>Application</b>	Encapsulant - glob top
<b>Filler Type</b>	Silica
<b>Filler Weight, %</b>	75
<b>Operating Temperature</b>	-65 to 150 °C
<b>Typical Package Application</b>	Automotive applications, IC memory cards, Chip carriers, Hybrid circuits, Chip-on-board, Multi-chip modules, BGA and Pin grid arrays

LOCTITE ECCOBOND FP4460 encapsulant is designed for protection of bare semiconductor devices. Pressure pot performance on live devices is up to 500 hours with no failures, depending on device and package type.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

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

Spindle 7., speed 4 rpm	425,000
Spindle 7., speed 10 rpm	300,000
Specific Gravity @ 25 °C	1.78
Gel Time @ 121°C, minutes	10
Pot Life @ 25 °C (time to double viscosity), days	2
Shelf Life @ -40°C (from date of manufacture), months	9

Flash Point - See SDS

## TYPICAL CURING PERFORMANCE

### Recommended Cure Schedule

3 hours @ 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 , ppm/°C:	
Below Tg	20
Glass Transition Temperature (Tg) by TMA, °C	173
Extractable Ionic Content, ppm:	
Chloride (Cl-)	13
Sodium (Na+)	11
Potassium (K+)	2
Glob Height, 0.2 gram mass, mm	1.8
Linear Shrinkage, %	0.135

## GENERAL INFORMATION

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

### 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.

### THAWING:

1. Allow container to reach room temperature before use.
2. DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
3. DO NOT re-freeze. Once thawed, the adhesive should not be re-frozen.

### 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 greater than -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

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

## 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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