

# LOCTITE ECCOBOND FP4527

November 2018

**PRODUCT DESCRIPTION**

LOCTITE ECCOBOND FP4527 provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Blue liquid
<b>Product Benefits</b>	<ul style="list-style-type: none"><li>• Low viscosity</li><li>• High flow</li><li>• Excellent wettability</li></ul>
<b>Cure</b>	Heat cure
<b>Application</b>	Semiconductor, Underfill
<b>Typical Applications</b>	Encapsulant for flip chip devices

LOCTITE ECCOBOND FP4527 is a low viscosity, high flow, epoxy based material designed for capillary underfill on flip chip applications.

**TYPICAL PROPERTIES OF UNCURED MATERIAL**

Viscosity, Cone & Plate, @ 25 °C cP:

Spindle 52, speed 10 rpm	12,000
Filler Content %	68
Particle Size, laser diffraction, µm	12
Pot Life @ 25 °C, days	2
Shelf Life @ -40°C, days	274
Flash Point - See SDS	

**TYPICAL CURING PERFORMANCE****Recommended Cure Schedule**

- 15 minutes @ 165°C on hot plate
- 30 minutes @ 165°C in Convection oven

**Alternate Cure Schedule**

- 1 hour @ 110°C plus 30 minutes @ 150°C in Convection oven

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	26
Above Tg	87

Glass Transition Temperature (Tg), °C:

(Tg) by TMA	158
(Tg) by DSC	140

Glob Height, 0.2 gram mass, mm	2
Linear Shrinkage, %	0.135
Extractable Ionic Content, (Material cured 30 minutes @ 165°C, is a 20 hour Parr Bomb extraction in water):	
Chloride (Cl-), ppm	5
Sodium (Na+), ppm	5

Moisture Absorption, 300 hours PCT, %	1.5
Flexural Modulus	GPa 10.3 (N/mm <sup>2</sup> ) (10,300) (psi) (1.49×10 <sup>6</sup> )

Elongation @ break, %	1.39
Modulus @ 23°C	GPa 5.5 (N/mm <sup>2</sup> ) (5,500) (psi) (798,000)

**TYPICAL PERFORMANCE OF CURED MATERIAL****Miscellaneous:**

Flexural Strength, 3 points bend, psi	17,000
Tensile Strength @ 23°C, psi	10,000

**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. Frozen packages must be completely thawed before use.
2. DO NOT thaw in an oven.

**Directions for use**

1. Allow material to reach room temperature before use.
2. For best results in dispensing, a 21 gauge needle should be used with approximately 10 psi pressure.
3. Optimum preheat temperature for the part is 90 to 100°C.

**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**

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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