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LOCTITE

Technical Data Sheet

LOCTITE ECCOBOND FP4547

April 2018

PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4547 provides the following product characteristics:

Technology	Epoxy
Appearance	Black liquid
Cure	Heat cure
Product Benefits	• High purity • Enhanced adhesion
Application	Semiconductor, Encapsulant
Filler content, %	69

LOCTITE ECCOBOND FP4547 liquid epoxy adhesive is designed to provide enhanced adhesion to integrated circuit passivation materials. This material is formulated to quickly underfill devices at 90 to 120°C substrate temperature, with as little as a 2 to 3 mil gap.

When fully cured, the material forms a rigid, low stress seal that dissipates stress on solder joints and extends thermal cycling performance. LOCTITE ECCOBOND FP4547 also exhibits low moisture absorption for improved JEDEC performance.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):	
Spindle 52, speed 20 rpm	18,000
Shelf Life @ -40°C, days	270
Pot Life @ 25 °C (time to double viscosity), day	1
Flow Rate, 3 mil gap, 500 mil flow:	
@ 90°C, seconds	60
@ 120 °C, seconds	25
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Gel Time

@ 121 °C, minutes	15

Recommended Cure Schedule

30 minutes @ 165°C

Conditions where a hot plate or a heat sink is used are optimum for fastest cure

With all curing systems, the time required for cure depends on the rate of heating. Cure rate depends on the mass of material to be heated and intimate contact with the heat source. Use suggested cure conditions as general guidelines. Other cure conditions may yield satisfactory results.

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

Glass Transition Temperature (Tg) by TMA, °C	135
Coefficient of Thermal Expansion, ppm/ºC:	
Below Tg	21
Above Tg	80
Flexural Modulus, N/mm²	11,000
Extractable Ionic Content, ppm:	
Chloride (Cl-)	<10
Sodium (Na+)	<5

TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength @ 25 °C, Kg:	
Nitride Passivated/FR4 Substrate 100 x 100 mil die	50+/-2

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 selected as a sealant for chlorine or other strong oxidizing materials.

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THAWING:

1. Frozen storage at approximately -40%, or lower is required for maximum shelf life.
2. Frozen packages must be completely thawed before use.
3. Store tip down and warm at room temperature until no longer cool to the touch (normally 60 to 90 minutes).
4. DO NOT thaw in an oven.
5. For best dispense results, a 22 gauge needle should be used at 10 to 20 psi pressure.
6. For best flow rates, a preheat temperature of 90 to 120°C is recommended.

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
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:
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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