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LOCTITE

Technical Data Sheet

LOCTITE ECCOBOND FP4549

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PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4549 provides the following product characteristics:

Technology	Epoxy
Appearance	White liquid
Product Benefits	• High purity • Low stress • Low moisture absorption • Extends thermal cycling performance • Dissipates stress on solder joints • Improved JEDEC performance
Cure	Heat cure
Application	Encapsulation
Typical Package Application	Flip chip devices

LOCTITE ECCOBOND FP4549 liquid epoxy adhesive is designed for enhanced adhesion to integrated circuit passivation materials. This material is formulated to quickly underfill devices at 90°C to 110°C with as little as a 1/2 mil gap. When fully cured, the material forms a rigid, low stress seal that dissipates stress on solder joints and extends thermal cycling performance.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - Cone & Plate, 25 °C, mPa·s (cP):	
Spindle 52, speed 20 rpm	2,300
Filler Content, % Ignition	50
Flow Rate @ 90 °C, 75 µm gap, 12,700 µm travel, seconds	15
Pot Life @ 25 °C (time to double viscosity), hours	24
Gel Time @ 121ºC, minutes	13.5
Shelf Life @ -40°C, days	274
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Recommended Cure Schedule

30 minutes @ 165°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 Linear Thermal Expansion, Sample cured 7 min @ 160°C:		
Below Tg, ppm/°C		45
Above Tg, ppm/°C		143
Glass Transition Temperature (Tg) by TMA, °C		140
Flexural Modulus	N/mm² (psi)	5,600 (812,000)
Extractable Ionic Content, ppm:		
Chloride (Cl-)		3
Sodium (Na+)		2

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

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

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. Store tip down and warm at room temperature until no longer cool to the touch (normally 60 to 90 minutes).
3. DO NOT thaw in an oven.

Directions for use

1. For best flow rates, a preheat temperature of 90 °C is recommended.
2. For best results in dispensing a 22 gauge needle should be used at 10 to 20 psi pressure.

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.

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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

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