

LOCTITE ECCOBOND FP4549

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PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4549 provides the following product characteristics:

Technology	Epoxy
Appearance	White liquid
Product Benefits	<ul style="list-style-type: none"> • 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 @ 121°C, 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 T_g, ppm/°C 45

Above T_g, ppm/°C 143

Glass Transition Temperature (T_g) by TMA, °C 140

Flexural Modulus	N/mm ² (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.

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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