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LOCTITE

Technical Data Sheet

LOCTITE ECCOBOND FP4451

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PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4451 provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Product Benefits	• High purity • Minimal slumping • Green product
Filler Weight, %	72
Cure	Heat cure
Application	Encapsulant - dam
Operating Temperature	-65 to 150 °C
Typical Package Application	BGA and IC memory cards
Flammability Rating	UL 94 HB @ 25 mm thickness

LOCTITE ECCOBOND FP4451 damming material is designed as a flow control barrier around areas of bare chip encapsulation. LOCTITE ECCOBOND FP4451 used in combination with FP4450, LOCTITE ECCOBOND FP4451 and other Henkel encapsulants passes pressure pot performance on live devices up to 500 hours with no failures depending on device and package type.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - RVT, 25 °C, cps:	
Spindle 7, speed 2 rpm	1,300,000
Spindle 7, speed 4 rpm	860,000
Specific Gravity @ 25 °C	1.76
Gel Time @ 121ºC, minutes	8
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

30 minutes @ 125°C plus
90 minutes @ 165°C

Alternate Cure Schedule

1 hour @ 165°C

This material can be co-cured after encapsulation.

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 (40 to 120°C)	22
Glass Transition Temperature (Tg) by TMA, °C	155
Extractable Ionic Content, ppm:	
Chloride (Cl-)	10
Sodium (Na+)	4
Potassium (K+)	1

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 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

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Disclaimer

Note:

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Reference 1

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