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LOCTITE

Technical Data Sheet

LOCTITE ECCOBOND FP4470

March 2017

PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4470 provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Filler Weight, %	75
Product Benefits	• High purity • 260ºC reflow capability for Pb-free applications • Green product • Excellent flow properties
Cure	Heat cure
Application	Encapsulant
Typical Package Application	BGA, Chip scale packages, PBGA and Full arrays on LTCC
Operating Temperature	-65 to 150 °C

LOCTITE ECCOBOND FP4470 features excellent flow properties allowing the material to penetrate fine pitch wires and deep cavities without entrapping voids. This product can withstand solder reflow after being exposed to JEDEC Level 2A (60°C/60% RH, 120 hours) preconditioning.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 6, speed 10 rpm	42,000
Specific Gravity @ 25 °C	1.8
Pot Life @ 25ºC, days	3
Shelf Life @ -40°C, days	274
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Gel Time

12 minutes @ 121°C

Cure Schedule

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

LOCTITE ECCOBOND FP4470 should be dispensed onto a substrate warmed to approximately 75°C.

The above cure profiles are guideline recommendations. 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 80°C)		18
Above Tg (170 to 210°C)		65
Glass Transition Temperature (Tg) by TMA, °C		148
Extractable Ionic Content @ 121 °C, ppm:		
Chloride (Cl-)		<2
Sodium (Na+)		<2
Potassium (K+)		1
Flexural Modulus :		
@ 25°C	N/mm²	12,700
	(psi)	(1.84×10^{6})
@ 240°C	N/mm²	600
	(psi)	(87,000)
Flexural strength , ASTM D790:		
@ 25°C	N/mm²	137,000
	(psi)	($1.99\times10^{+7}$)
@ 240°C	N/mm²	17,000
	(psi)	($2.47\times10^{+6}$)

Electrical Properties

Volume Resistivity, IEC 60093, Ω·cm	5×10^{16}
Dielectric Constant / Dissipation Factor@ 1 MHz	3.5/0.01

GENERAL INFORMATION

For safe handling information on this product, consult the Safety Data Sheet, (SDS).

THAWING:

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. Warm at room temperature until no longer cool to the touch (normally 60 to 90 minutes).
4. DO NOT thaw in an oven.

DIRECTIONS FOR USE

1. For best results, dispense onto substrate warmed to 75°C.
2. Once dispensed, material should be cured within 30 minutes to prevent moisture contamination.
3. The cured properties of moisture contaminated material will be poorer than those described.
4. **NOTE:** Elevated temperatures reduce working life.

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.

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 -40°C or greater than -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

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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:
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Reference 2