Technical Data Sheet

LOCTITE ECCOBOND FP4451TD

April 2020

PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4451TD provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Product Benefits	• High purity • Excellent chemical resistance • Exceptional thermal stability
Cure	Heat cure
Application	Encapsulant - dam
Filler Type	Silica
Filler Weight, %	73
Operating Temperature	-65 to 150 °C
Typical Package Application	BGA and IC memory cards

LOCTITE ECCOBOND FP4451TD damming material is designed as a flow control barrier around areas of bare chip encapsulation.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7,, speed 20 rpm	300,000
Specific Gravity @ 25 °C	1.79
Gel Time @ 121ºC, minutes	13
Pot Life @ 25 °C (time to double viscosity),days	10
Shelf Life @ -40°C (from date of manufacture), days	274
Particle Size, µm, median	20
Particle Size, µm, maximum	200
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

30 minutes @ 125°C plus
90 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 Thermal Expansion, ppm/°C:	
Below Tg (40 to 120°C)	21
Above Tg (190 to 220°C)	65
Glass Transition Temperature (Tg) by TMA, °C	150
Extractable Ionic Content, :	
Chloride (Cl-)	<10
Sodium (Na+)	<1
Potassium (K+)	<1
Aspect Ratio (H/W)	0.7

Electrical Properties

Dielectric Constant / Dissipation Factor :	
@ 5 GHz	3.52/0.0060
@ 10 GHz	3.50/0.018
@ 20 GHz	3.49/0.017
@ 30 GHz	3.48/0.017
@ 40 GHz	3.48/0.017
@ 50 GHz	3.50/0.031

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.

DIRECTIONS FOR USE

1. A positive displacement pump is recommended for reproducible shot sizes.
2. A needle size ≥18 gauge should be used.
3. For best results, dispense onto substrate warmed to 80°C.
4. Care should be taken to protect syringe material from excessive heat prior to dispense.
5. The cured properties of moisture contaminated material will be poorer than those described.
6. Once dispensed, material should be cured within 30 minutes to prevent moisture contamination.

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 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/F
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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