Technical Data Sheet

LOCTITE ECCOBOND FP4401

April 2018

PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4401 provides the following product characteristics:

Technology	Epoxy
Appearance	Black liquid
Cure	Heat cure
Application	Encapsulating

LOCTITE ECCOBOND FP4401 is a low flow, high purity liquid epoxy encapsulant. LOCTITE ECCOBOND FP4401 has a high glass transition temperature and low coefficient of thermal expansion which gives improved thermal cycling characteristics on ceramic. Performance in 85°C/85% R.H. with bias and resistance to chlorinated cleaning solvents are excellent. Compared to silicone encapsulants, LOCTITE ECCOBOND FP4401 provides equivalent electrical performance and enhanced mechanical protection.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 2 rpm	3,609
Spindle 7, speed 20 rpm	1,118
Filler Content, %	75
Specific Gravity @ 25ºC	1.78
Shelf Life @ -40°C, days	270
Pot life @ 25 °C, time required to double viscosity, 200 gram mass, hours	24
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Recommended Cure

3 hours @ 170°C or
6 hours @ 150°C

Designed for robust packages which are not highly sensitive to stress.

Alternate Cure

2 hours @ 125 °C plus
4 hours @ 150 °C

Designed for packages which are effected by high levels of stress.

Gel Time

Gel Time @ 121 °C, minutes	17

Curing below 140°C is not recommended. User should gel devices immediately after dispensing to prevent moisture degradation of ultimate cure properties. Monitor ovens to insure adequate temperature control.

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, in/in/°C	$<22x10^{-6}$
Linear Shrinkage, %:	
3 hours @ 170ºC	0.568
1 hour @ 120°C & 4 hours @ 160°C	0.302
Glass Transition Temperature (Tg), °C	160
Extractable Ionic Content, ppm:	
Chloride (Cl-)	20
Potassium (K+)	20
Sodium (Na+)	20

Outgassing Properties:

Outgassing , %:	
TWL	0.15
CVM	0.0

Electrical Properties:

Dielectric Constant / Dissipation Factor @ 25ºC:	
@ 1kHz	3.2/0.007
@ 10kHz	3.15/0.007
@ 100kHz	3.1/0.007
Volume Resistivity, ohm-cm	1.0×10^{14}
Surface Resistivity, ohms	1.3×10^{14}

GENERAL INFORMATION

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

STORAGE:

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling. 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

(°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:
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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