Technical Data Sheet

LOCTITE STYCAST ES 4322

December 2012

PRODUCT DESCRIPTION

LOCTITE STYCAST ES 4322 provides the following product characteristics:

Technology	Epoxy
Appearance,Resin (Component A)	Black
Appearance, Hardener (Component B)	Gray Tan
Components	Two components - requires mixing
Mixing Ratio, by weight Component A: Component B	100 : 100
Product Benefits	• High purity • High flow • Non-conductive
Cure	Heat cure
Application	Encapsulation
Typical Applications	Encapsulation of bare chips mounted to plastic substrates and Potting of small hybrid circuit modules

LOCTITE STYCAST ES 4322 liquid epoxy encapsulant is for protection of semiconductor devices . It is a high flow material which requires a cavity of flow control barrier to prevent excessive flow.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A Properties EA4322

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 7, speed 20 rpm	140,000
Filler Content, ASTM D2584, %	65
Specific Gravity, ASTM D1475	1.68
Shelf Life:	
@ 5ºC, months	18
@ 25ºC, year	1
Flash Point - See SDS	

Part B Properties EB4322

Viscosity, Brookfield - RVF, 25 °C, , mPa·s (cP):	
Spindle 7, speed 20 rpm	17,000
Filler Content, ASTM D2584, %	65
Specific Gravity, ASTM D1475	1.68
Shelf Life:	
@ 5ºC, months	18
@ 25ºC, year	1
Flash Point - See SDS	

Mixed Properties LOCTITE STYCAST ES 4322

Mixed Viscosity @ 25 ºC, mPa·s (cP):	
Spindle 7, speed 20 rpm	50,000
Gel Time @ 121 °C, minutes	11
Pot Life @ 25ºC, min day**	1

** Time to double in Viscosity

TYPICAL CURING PERFORMANCE

Recommended Cure Schedule

2 to 3 hours @ 170°C or
3 to 6 @ 150°C

Alternate Cure Schedule

1 hour @ 125°C plus 4 hours @ 150°C

Curing below 140°C is not recommended.

Key material properties are affected by cure conditions, including: glass transition temperature, adhesion, modules, moisture absorption, and chemical resistance. These properties generally improve with longer cure time due to increased cross link density. Cure time of 3 to 6 hours may be required for severe environmental conditions.

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 :

Appearance	Black
Coefficient of Linear Thermal Expansion:	
Below Tg, ppm/°C	26
Above Tg, ppm/°C	88
Glass Transition Temperature (Tg) by TMA, °C	175
Shore Hardness, ASTM D2240Shore D	97
Linear Shrinkage, ASTM D2566,, %	0.43
Moisture Absorption, ASTM D570, %:	
8 hours immersion @ 100°C	0.25
Extractable Ionic Content, :	
Chloride (Cl-)	7
Sodium (Na+)	2
Potassium (K+)	1

Electrical Properties:

Volume Resistivity, ASTM D257ohm-cm	6.2×10^{14}
Surface Resistivity, ASTM D257, ohms	1.6×10^{14}
Dissipation Factor, (D), ASTM D150:	
1 KHz	0.005
10 KHz	0.006
100 KHz	0.011
Dielectric Constant , (K), ASTM D150:	
1 KHz	3.18
10 KHz	3.15
100 KHz	3.04

GENERAL INFORMATION

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

DIRECTIONS FOR USE

1. LOCTITE STYCAST ES 4322 may settle upon storage at room temperature.
2. Cold storage @ 5ºC will minimize filler settling.
3. Each container must be thoroughly mixed before combining Part A and Part B. After warming to room temperature, approximately 5 to 10 minutes on a standard paint shaker will normally ensure complete dispersion of the filler.
4. Stir with a large spatula to check for lumps.
5. Part B may form a crust if exposed to moist air for an extended period of time. Keep in a well sealed container. For best results, do not use Part B which contains this crust caused by moisture contamination.
6. Thorough mechanical mixing of Part A and Part B together is required for best results. Hand mixing alone is not recommended.

STORAGE:

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

Optimal Storage : 5 °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.

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.

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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