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LOCTITE

Technical Data Sheet

LOCTITE ECCOBOND E 1172 A

September 2012

PRODUCT DESCRIPTION

LOCTITE ECCOBOND E 1172 A provides the following product characteristics:

Technology	Epoxy
Appearance	Tan
Cure	Heat cure
Product Benefits	• One component • Fast cure at low temperatures • Low cure temperature • Void-free underfill • Low CTE • Non-anhydride curing chemistry • Long pot life
Application	Underfill
Filler Weight, %	65 to 68
Typical Package Application	Flip chip devices

LOCTITE ECCOBOND E 1172 A is formulated for use with very fine area array devices where SMT transparent processing is critical. This material can underfill devices with 25 micron geometries. LOCTITE ECCOBOND E 1172 A provides a uniform and void-free encapsulant underfill, maximizing the device's temperature cycling capability, distributing stress away from solder connects.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield , mPa·s (cP):	
Spindle 3, speed 5 rpm	17,000
Particle Size, Maximum, µm	20
Density, g/cm³	1.68
Flow Rate @ 100°C, seconds:	
1 cm travel on Glass	
@ 25 micron gap	25
@ 50 micron gap	25
@ 100 micron gap	16
:	
@ 25 micron gap	25
@ 50 micron gap	25
@ 100 micron gap	16
Pot Life @ 25ºC, hours	48
Shelf Life:	
@ -40ºC, days	183
@ -20ºC, days	91
@ 25ºC, hours	48
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

Standard Cure
6 minutes @ 135°C

Fast Cure
3 minutes @ 150°C

Low Stress Cure
30 minutes @ 100 °C plus 5 minutes @ 135 °C

Shrinkage on Cure

Cure Shrinkage, %	0.47

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

Sample cured 30minutes @ 120°C

CTE and Tg informtion obtained from first run sample exposure using a TMA

Physical Properties

Coefficient of Linear Thermal Expansion, ppm/°C	27
Glass Transition Temperature (Tg), °C	135
Extractable Ionic Content, ppm:	
Chloride (Cl-)	<35
Sodium (Na+)	<15
Potassium (K+)	<10
Hardness, Shore D	≥90
Water Absorption, 24-hr boil, %	1.5

Electrical Properties

Volume Resistivity, ohms-cm	1×10^{15}
Dielectric Constant/Dissipation Factor @ 1 MHz	3.52/0.0042

GENERAL INFORMATION

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

THAWING:

1. After removing from the freezer, set the syringes to stand vertically while thawing.
2. Syringes should thaw a minimum of 60 minutes.

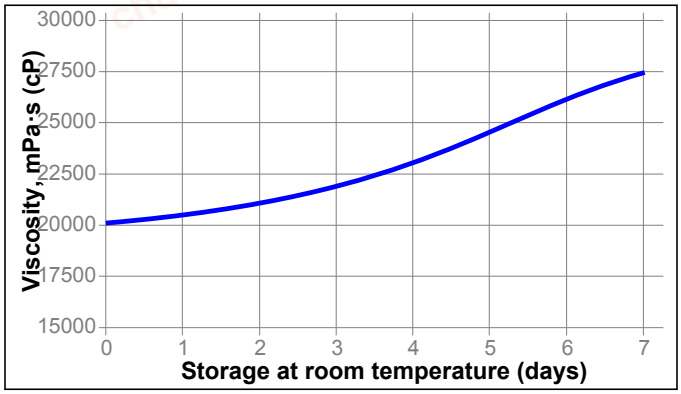
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DIRECTIONS FOR USE

1. Preheat assembly to between 90°C and 120°C. Higher temperatures reduce underfill times.
2. Dispense a bead of the underfill using a syringe fitted with a 23 gauge needle (or larger) on one (line) or two sides (L-Shape) of the device perimeter.
3. Hold at temperature for capillary flow to occur.
4. Very large devices may require multiple beads of underfill, but for most no second or 'fillet pass' is required.

Worklife:



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 to -20 °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

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Note:
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Reference 1

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