Technical Data Sheet

LOCTITE® ECCOBOND UF 3711

December 2023

Product description
LOCTITE® ECCOBOND UF 3711 provides the following product characteristics:

Technology	Epoxy
Appearance	White paste
Components	One component
Product benefits	• UV curable • Thixotropic • Very low CTE • High Tg and modulus • Low curing shrinkage
Cure	UV or UV + heat cure
Application	Edgebond, Encapsulation, Active alignment
Operating temperature range	(-40°C to 125°C)

LOCTITE® ECCOBOND UF 3711 curable adhesive is formulated for chips to enhance the reliability performance. It provides a uniform and void-free encapsulant edgebond, maximizing the device's temperature cycling capability, distributing stress away from solder connects, as well as improving device's reliability under high temperatures and high humidity.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, TA Rheometer, 20mm 0°cone, 25°C, mPa.s (cP)	
@15s^{-1}	35,000
TI (1.5s^{-1}/15s^{-1})	4.6
Specific gravity @ 25°C, g/cc	1.78
Work life, hours	72
Shelf life @ -20°C, days	180

TYPICAL CURING PERFORMANCE

Recommended UV cure condition

Light source and condition:	
365nm UV LED lamp	
UV wavelength, nm	365
Light intensity, mW/cm²	700
UV energy, mJ/cm^2	7,000

LOCTITE® ECCOBOND UF 3711 can be cured by exposure to UV light of sufficient intensity. Cure rate and ultimate depth of cure depend on light intensity, spectral distribution of light source, exposure time and light transmittance of the substrate through which the light must pass.

For application where there is shadow area or high curing depth (≥4mm) is required, secondly heat cure is recommended following UV irradiation. Recommended secondary heat cure condtions are:

Option 1	
Temperature, °C	120
Time, min	≥10
Option 2	
Temperature, °C	100
Time, min	≥20
Option 3	
Temperature, °C	80
Time, min	≥40

TYPICAL PROPERTIES OF CURED MATERIAL

Sample cured by UV irradiation (365 nm, 700 mW/cm² and 7000 mJ/cm²)

Physical properties

Coefficient of thermal expansion, ASTM E831-86, µm/m/K:	
alpha 1	20
alpha 2	62
Glass transition temperature, Tg by TMA, ºC	150
Tensile modulus, @ 25°C by DMA, GPa	13.6
Cure shrinkage, Volume, %	1.4
Water absorption, (168h, 85°C85%RH), %	1.1

Electrical properties

Dielectric constant / Dissipation factor	
@ 5GHz	3.3 / 0.0108
Volume resistivity, @ 500 volts, ohms-cm	2.91×10^{15}
Dielectric breakdown strength, KV/mm	24

TYPICAL PERFORMANCE OF CURED MATERIAL

Die shear strength

3*3 glass die to FR4	kgf	>12
	psi	>1,740

GENERAL INFORMATION

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

Directions for use

1. Set the syringe to stand vertically at room temperature, thaw the adhesive to 25°C.
2. Thawed adhesive should be immediately placed on dispense equipment for use.
3. If the adhesive is transferred to a final dispensing reservoir, additional SOP need to be generated to avoid entrapment of contaminants, moisture and air into the adhesive.
4. Adhesive must be completely used within the product's recommended work life.
5. Do not re-freeze/re-use any thawed adhesive.

Storage

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

Optimal storage: -20 °C

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel 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 Henkel 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 the specifications of this product.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
µm / 25.4 = mil
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
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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Reference 1