Technical Data Sheet

XCE3104XL

November 2011

PRODUCT DESCRIPTION

XCE3104XL provides the following product characteristics:

Technology	Epoxy
Appearance	Silver
Product Benefits	• One component • Thermosetting • Controlled particle size • Electrically conductive • Pb-free alternative to solder • Long stencil work life at high print speed • Low temperature cure • No post cure required • Low CTE • Intrinsically clean
Cure	Heat cure
Application	Assembly
Typical Assembly Applications	Surface mount devices
Surfaces	Sn/Pb, Sn, OSP coated Cu and Nickel/gold

XCE3104XL is an electrically conductive adhesive with tin compatibility for fine stencil and screen print applications. It uses a unique blend of fillers with tightly controlled particle sizes to provide fine pitch printing performance using standard SMT equipment. XCE3104XL cures completely using a typical solder eutectic reflow cycle or at lower temperatures when required.

XCE3104XL won the SMT Vision Award in 2002 in the best adhesive/encapsulant/coating category.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield CP52, mPa·s (cP):	
Speed 5.0 rpm	54,000
Shear Thinning Index (Rheometer)	4.9
Pot Life (Static), days	2
Shelf Life @ -40°C, months	6
Flash Point - See MSDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

15 minutes @ 125°C

Alternative Cure Schedule

10 minutes @ 150°C

XCE3104XL maybe cured in a batch oven at low temperatures or in a standard reflow oven. This material cures completely during a typical reflow cycle. No post operation required.

The above cure profiles are guideline recommendations. 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 :		
Below Tg, ppm/°C		46
Above Tg, ppm/°C		160
Glass Transition Temperature, °C:		
by TMA , 10ºC/minute		109
by DMA , 3ºC per minute ramp, 1Hz Frequency, 40u Amplitude:		
Storage Modulus		116
Peak Tan Δ		136
Thermal Conductivity, Laser Flash, W/mK		1.8
Modulus , 3ºC/minute, 1Hz, 40u:		
@ 25°C	N/mm² (psi)	6,600 (957,250)
@ 150°C	N/mm² (psi)	400 (58,015)
Extractable Ionic Content, ppm:		
Chloride (Cl-)		≤50
Sodium (Na+)		≤10
Potassium (K+)		≤5

Electrical Properties:

Volume Resistivity, ohm/cm @ 25ºC	0.0005

TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength, Kg:	
100 x 100 mil Silicon die on Al leadframe	≥28
Component Shear Strength, Kg:	
0805 SnPb resistors, Avg of 30 resistors:	
on OSP coated Cu pads	6.9
on Au/Ni pads	6.7

TYPICAL PERFORMANCE AND RELIABILITY DATA

Contact resistance stability has been evaluated using a 4 mils print on a daisy chain pattern populated with 0805 Sn/Pb null ohms resistors.

Substrate used was FR-4. Single joint contact resistance. Average of 100 joints.

Contact Resistance:

Initial/After

(After 1,000 hours, 85ºC, 85% RH):

OSP coated Cu, mOhm	16/16
Au/Ni, mOhm	16/16

Initial/After

(After 1,000 hours, 125°C aging):

OSP coated Cu, mOhm	17/14
Au/Ni, mOhm	15/16

GENERAL INFORMATION

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

THAWING:

1. Allow container to reach room temperature before use.

DIRECTIONS FOR USE

1. XCE3104XL adhesive is capable of fine pitch resolution (less than 20 mils) when printed using a metal mask stencil. This product is also printable using a stainless steel mesh screen. This adhesive may be used with tin, tin/lead, OSP coated Cu and nickel/gold printed cicuit board metallizations.

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 °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
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

Note

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Reference 0.0