Technical Data Sheet

LOCTITE ABLESTIK XCE 3104XL

October 2014

PRODUCT DESCRIPTION

LOCTITE ABLESTIK XCE 3104XL 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

LOCTITE ABLESTIK XCE 3104XL 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. LOCTITE ABLESTIK XCE 3104XL cures completely using a typical solder eutectic reflow cycle or at lower temperatures when required.

LOCTITE ABLESTIK XCE 3104XL 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, days	183
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

15 minutes @ 125°C

Alternate Cure Schedule

10 minutes @ 150°C

LOCTITE ABLESTIK XCE 3104XL 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/(m-K)		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. LOCTITE ABLESTIK XCE 3104XL 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 = N/mm²
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

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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Reference 0.1