

# LOCTITE ABLESTIK XCE 3104XL

October 2014

## PRODUCT DESCRIPTION

LOCTITE ABLESTIK XCE 3104XL provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Silver
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• One component</li> <li>• Thermosetting</li> <li>• Controlled particle size</li> <li>• Electrically conductive</li> <li>• Pb-free alternative to solder</li> <li>• Long stencil work life at high print speed</li> <li>• Low temperature cure</li> <li>• No post cure required</li> <li>• Low CTE</li> <li>• Intrinsically clean</li> </ul>
<b>Cure</b>	Heat cure
<b>Application</b>	Assembly
<b>Typical Assembly Applications</b>	Surface mount devices
<b>Surfaces</b>	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 may be 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, 10°C/minute	109
by DMA, 3°C per minute ramp, 1Hz Frequency, 40u Amplitude:	
Storage Modulus	116
Peak Tan Δ	136

Thermal Conductivity, Laser Flash, W/(m·K)

Modulus, 3°C/minute, 1Hz, 40u:	
@ 25°C	N/mm <sup>2</sup> 6,600
	(psi) (957,250)
@ 150°C	N/mm <sup>2</sup> 400
	(psi) (58,015)

Extractable Ionic Content, ppm:

Chloride (Cl <sup>-</sup> )	≤50
Sodium (Na <sup>+</sup> )	≤10
Potassium (K <sup>+</sup> )	≤5

### Electrical Properties:

Volume Resistivity, ohm-cm @ 25°C	0.0005
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## TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength, Kg:

100 x 100 mil Silicon die on Al leadframe	≥28
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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, 85°C, 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 circuit 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/mm<sup>2</sup> x 145 = psi  
 MPa = N/mm<sup>2</sup>  
 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

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Reference 0.1