

# LOCTITE EIF 1000

Known as ISOSTRATE

October 2014

## PRODUCT DESCRIPTION

LOCTITE EIF 1000 provides the following product characteristics:

<b>Technology</b>	Phase Change
Appearance	Amber
Product Benefits	<ul style="list-style-type: none"> <li>High dielectric strength</li> <li>Excellent cut-through resistance</li> </ul>
Operating Temperature Range	up to 150°C
<b>Application</b>	Thermal management
Typical Assembly Applications	<ul style="list-style-type: none"> <li>Used between any non-isolated heat dissipating component and a heat sink or chassis</li> <li>Electrical isolator</li> <li>Replacement for silicone rubber pads or grease/mica installations</li> </ul>

LOCTITE EIF 1000 electrically isolating phase change thermal interface material is suitable for use between a heat sink and variety heat generating components. This product is supplied as a dry compound coated onto a Kapton™ MT substrate. The compound is designed to flow at the phase change temperature, conforming to the surface features of the heat sink and component. Upon flow, air is expelled from the interface, reducing thermal impedance, performing as a highly efficient thermal transfer material.

LOCTITE EIF 1000 is supplied as die-cut preforms to match a wide variety of electronic components. Custom parts are also available upon request with low cost tooling.

LOCTITE EIF 1000 meets UL 94 V-0 Flammability rating.

## MATERIAL PROPERTIES

LOCTITE EIF 1000 is supplied in a range of substrate thicknesses to match surface finish and flatness considerations in the interface area and to provide a wide range of dielectric strength capability.

### KA

Thickness:			
Substrate	mm	0.051	
	(inches)	(0.002)	
Total	mm	0.076	
	(inches)	(0.003)	
Thermal Impedance , ASTM-D-5470:			
@ 80 psi	°C-cm <sup>2</sup> /W	1.29	
	(°C-in <sup>2</sup> /W)	(0.2)	
Thermal Conductivity , W/(m-K)		0.45	

### KB

Thickness:			
Substrate	mm	0.025	
	(inches)	(0.001)	
Total	mm	0.051	
	(inches)	(0.002)	

Thermal Impedance , ASTM-D-5470:

@ 80 psi	°C-cm <sup>2</sup> /W	0.776
	(°C-in <sup>2</sup> /W)	(0.12)

Thermal Conductivity , W/(m-K)

0.45

### K1

Thickness:

Substrate	mm	0.038
	(inches)	(0.0015)
Total	mm	0.0635
	(inches)	(0.0025)

Thermal Impedance , ASTM-D-5470:

@ 20 psi	°C-cm <sup>2</sup> /W	1.02
	(°C-in <sup>2</sup> /W)	(0.158)
@ 137.9 KPa	°C-cm <sup>2</sup> /W	0.981
	(°C-in <sup>2</sup> /W)	(0.152)

Thermal Conductivity , W/(m-K)

0.45

### K3

Thickness:

Substrate	mm	0.076
	(inches)	(0.003)
Total	mm	0.102
	(inches)	(0.004)

Thermal Impedance , ASTM-D-5470:

@ 80 psi	°C-cm <sup>2</sup> /W	1.03
	(°C-in <sup>2</sup> /W)	(0.16)

Thermal Conductivity , W/(m-K)

0.45

### K5

Thickness:

Substrate	mm	0.152
	(inches)	(0.005)
Total	mm	0.127
	(inches)	(0.006)

Thermal Impedance , ASTM-D-5470:

@ 80 psi	°C-cm <sup>2</sup> /W	2.9
	(°C-in <sup>2</sup> /W)	(0.45)

Thermal Conductivity , W/(m-K)

0.45

## ELECTRICAL PROPERTIES

While phase change compound incorporated in LOCTITE EIF 1000 is not electrically isolating, electrical isolation is achieved through the use of the Kapton® MT substrate used. The data below is taken from Dupont's Kapton® MT Technical Data Sheet.

Volume Resistivity, ohm-cm	1×10 <sup>14</sup>
Dielectric Strength, ASTM D149-91, VAC/mil	4,500 to 5,000
Dielectric Constant	4.2

## PHYSICAL PROPERTIES

Phase Change Temperature, °C	60	
Viscosity above phase change temperature	Thixotropic	
Tensile Strength	KPa	$1.24 \times 10^5$
	(Kpsi)	(18)
Cut-Through Resistance (per Dupont Test Method)	Kg	18.1
	(Lbs)	(40)

LOCTITE EIF 1000 may be available as single die cut pads, multi-pad sheets, or on continuous rolls for high volume production.

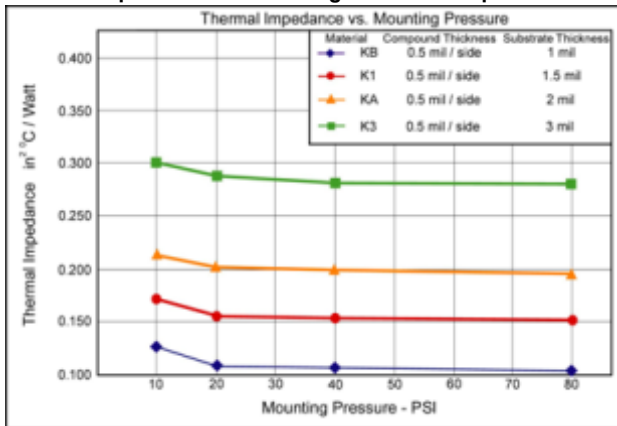
LOCTITE EIF 1000 is also available with adhesive edge strips for ease of assembly. In this case, the pad will be oversized so that the adhesive is outside the thermal path. This enables the adhesive to be provided without compromising the thermal performance of the portion of the pad in the contact area of the thermal path.

## PRODUCT PERFORMANCE

### Thermal Impedance vs. Mounting Pressure

The performance of any phase-change thermal interface material will be improved by increasing the mounting pressure at the interface. The graph below shows the thermal impedance values generated on an platform. The test block dimensions are 2" x 2", the finish is 64 microinches and the flatness is 0.002 in/in. The power level is 80 watts.

### Thermal Impedance vs. Mounting Pressure Graph



## GENERAL INFORMATION

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

## SURFACE CONDITIONS

- LOCTITE EIF 1000 is available in four substrate thicknesses to provide optimum thermal performance and cut-through resistance on a variety of surface finishes.
- While thinner substrates provide lower thermal impedance for better thermal performance, care should be taken to select a substrate thickness, which will provide sufficient cut-through resistance to avoid any potential for dielectric breakdown.
- Thinner substrate materials are more cost effective and can be selected if the interface area is clean and free from foreign particulates, which could intrude the potential for cut-through.

## DIRECTIONS FOR USE

- LOCTITE EIF 1000 is completely re-workable. No foreign residue remains after disassembly. A replacement pad can be installed without further cleaning.
- If a clean surface is required, any presence of a compound can be easily removed with mineral spirits.
- No silicones are utilized in the formulation of the phase change thermal compound.

## AVAILABILITY

Pre-tooled pads are available for many commonly used electronic devices.

## Storage

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

### Optimal Storage : Below 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

## 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.

## Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} = \text{N/mm}^2$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

## 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