



# BERGQUIST LIQUI FORM TLF LF2000

BERGQUIST LIQUI-FORM 2000  
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## PRODUCT DESCRIPTION

Thermally Conductive, One-Part, Liquid Formable Material.

<b>Technology</b>	Silicone
<b>Appearance</b>	Gray
<b>Cure</b>	Pre-cure gel
<b>Application</b>	Thermal management, TIM (Thermal Interface Material)
<b>Operating Temperature Range</b>	-60 to 200°C
<b>UL Flammability Rating</b>	UL 94 V-0

## FEATURES AND BENEFITS

- Thermal Conductivity: 2.0 W/m-K
- Applies very low force on components during assembly
- Low volumetric expansion
- Excellent chemical and mechanical stability even at higher temperatures
- No curing required
- Stable viscosity in storage and in the application

BERGQUIST LIQUI FORM TLF LF2000 is a high thermal conductivity liquid formable material designed for demanding applications requiring a balance between dispensability, low component stresses during assembly and ease of rework.

BERGQUIST LIQUI FORM TLF LF2000 is a highly conformable shear-thinning material which requires no curing, mixing or refrigeration. Its unique formulation assures excellent thermal performance, low applied stress and reliable long-term performance.

BERGQUIST LIQUI FORM TLF LF2000 is thixotropic and has a natural tack ensuring it forms around the component and stays in place in the application.

## TYPICAL APPLICATIONS

- Bare die to heat spreader lid
- Filling various gaps between heat-generating devices to heat sink and housing
- Devices requiring low assembly pressure
- BGA, PGA, PPGA

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Capillary, ASTM D2196, Pa·s:	
High shear, Shear Rate 300 s <sup>-1</sup>	110
Viscosity, Parallel Plate, ASTM D4473, mPa·s (cP):	
Low shear, Shear Rate 0.001 s <sup>-1</sup>	20,000
Density, ASTM D792, g/cc	2.8
Shelf Life @ 25°C, months	6

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Volumetric Expansion, 25 to 275°C, ASTM E228 modified, ppm/°C	600
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### Electrical Properties

Dielectric Strength, ASTM D149, V/mm	10,000
Dielectric Constant, ASTM D150, 1,000Hz	8.0
Volume Resistivity, ASTM D257, ohm-meter	1×10 <sup>9</sup>

### Outgassing Properties

Total Mass Loss, %, ASTM E595	0.53
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### Thermal Properties

Thermal Conductivity, ASTM D5470, W/(m·K)	2.0
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### Thermal Performance vs. Pressure

Thermal Impedance, ASTM D5470, °C-in <sup>2</sup> /W <sup>(1)</sup>	
@ 10 psi	0.13
@ 25 psi	0.12
@ 50 psi	0.12

(1) The ASTM D5470 test fixture was utilized. The recorded values include the interfacial thermal resistance. The values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied

## GENERAL INFORMATION

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

### 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.

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.



**CONFIGURATIONS AVAILABLE**

BERGQUIST LIQUI FORM TLF LF2000 is supplied in:

Cartridges	30cc, 600cc
Pail	5gallon

**THAWING:**

1. If refrigerated, allow container to reach room temperature before use.
2. DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.

**STORAGE**

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

Optimal Storage: 5 to 25°C for a 6 month shelf life, in sealed containers with moisture barrier packaging.

**Conversions**

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

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**Reference 2**

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