



LIQUI FORM TLF LF 2000

known as LIQUI-FORM 2000

November 2018

PRODUCT DESCRIPTION

Thermally Conductive, One-Part, Liquid Formable Material.

Technology	Silicone
Appearance	Gray
Cure	Heat cure or Room temperature cure
Application	Thermal management, TIM (Thermal Interface Material)
Operating Temperature Range	-60 to 200°C
UL Flammability Rating	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

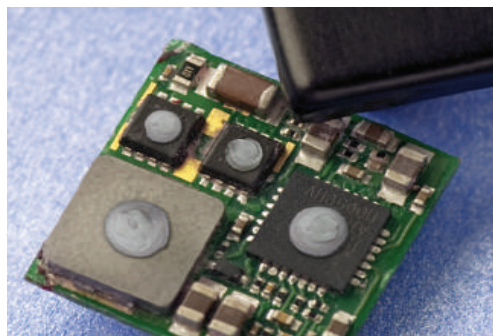
LIQUI FORM TLF LF 2000 is a high thermal conductivity liquid formable material designed for demanding applications requiring a balance between dispensability, low component stresses during assembly and ease of rework.

LIQUI FORM TLF LF 2000 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.

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 sinks and housings
- 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 ⁻¹	110
Viscosity, Parallel Plate, ASTM D4473, mPa·s (cP):	
Low shear, Shear Rate 0.001 s ⁻¹	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
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 ⁹
Outgassing Properties	
Total Mass Loss, %, ASTM E595	0.53
Thermal Properties	
Thermal Conductivity, ASTM D5470, W/(m-K)	2.0
Thermal Performance vs. Pressure	
Thermal Impedance, ASTM D5470, °C-in ² /W ⁽¹⁾	
@ 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

LIQUI FORM TLF LF 2000 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. 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

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

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