



BERGQUIST LIQUI FORM TLF 4500CGEL-SF

September 2020

PRODUCT DESCRIPTION

Thermally Conductive, One-Part, Curable Gel Sil-free Material.

Technology	Silicone free
Appearance	Gray paste
Cure	Moisture cure
Application	Thermal management, TIM (Thermal Interface Material)
Application Method	Dispense from cartridge or pails
Operating Temperature Range, Continuous or others	-40 to 125°C

FEATURES AND BENEFITS

- Thermal Conductivity: 4.5 W/m-K
- 1K curable application gel for enhanced processing and excellent temperature, mechanical, and chemical stability
- Silicone-free formulation
- Optimized shear thinning rheology for enhanced 1K dispense rate
- Excellent form stability (stays in place)
- Ultra-conforming, with excellent wet-out and low assembly stress
- Suitable for low stress interface applications

BERGQUIST LIQUI FORM TLF 4500CGEL-SF is a one part, high performance, thermally conductivity, silicone-free, room temperature curable gel designed for demanding high reliability applications. Curing (skin formation) can be accelerated with heat.

As cured, BERGQUIST LIQUI FORM TLF 4500CGEL-SF provides a soft, thermally conductive, form-in place elastomer that is ideal for fragile assemblies, capable of filling unique and intricate air voids and gaps. It is ideal for applications where highly reliable vertical gap stability is required.

BERGQUIST LIQUI FORM TLF 4500CGEL-SF requires no mixing or refrigerated storage. This material's unique silicone-free formulation assures a balanced mix of high thermal conductivity, good dispensing efficiency and high performance reliability.

TYPICAL APPLICATIONS

- Automotive electronics (ADAS, EV, ECU)
- Telecommunications
- Devices requiring low assembly pressure
- Computer peripherals
- Between heat-generating semiconductors and a heat sink

TYPICAL PROPERTIES OF UNCURED MATERIAL

Dispense Rate, grams/minute ⁽¹⁾	45
Viscosity, Pa-s:	
Low shear rate, 1.0 s ⁻¹ , DIN 53019	520
High shear rate, 1,500 s ⁻¹ , ASTM D5099	100
Density, ASTM D792, g/cc	3.1
Shelf Life @ 25°C (still in validation testing), days	180

(1) 30cc syringe, 90 psi (621 kPa), 0.100" orifice no attachment

TYPICAL CURE SCHEDULE

Recommended Cure

24 hours @ 25°C, 50% RH

Curing (skin formation) can be accelerated with heat. Please contact your Henkel representative for application note.

The above cure profile is a guideline recommendation. These cure conditions (time and temperature) may vary based on customers' experience and specific application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.



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TYPICAL PROPERTIES OF CURED MATERIAL**Physical Properties**

Siloxane Content, Σ D4-D10, ASTM F2466, ppm	N/D
Heat Capacity, ASTM E1269, J/g-°C	0.84
Hardness, Shore 00:	
2 hours @ 100 °C ⁽²⁾	75
2 weeks @ 25°C, 50% RH	50

Electrical Properties

Dielectric Strength, ASTM D149, V/mil	250
Dielectric Constant, ASTM D150 @ 1,000Hz	11
Volume Resistivity, ASTM D257, ohm-meter	1×10 ⁷

Thermal Properties

Thermal Conductivity, ASTM D5470, W/(m-K)	4.5
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⁽²⁾ Henkel custom testing. See app note for details

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.

CONFIGURATIONS AVAILABLE

BERGQUIST LIQUI FORM TLF 4500CGEL-SF is available with glass beads optional.

BERGQUIST LIQUI FORM TLF 4500CGEL-SF is supplied in:

Cartridges	30cc, 150cc, 300cc, 600cc
Pail	0.8 gallon, 4.3 gallons

STORAGE

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

Optimal Storage: 25°C for a 180 days 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 1