Technical Data Sheet

LOCTITE TCF 1000

Known as THERMSTRATE
October 2015

PRODUCT DESCRIPTION

LOCTITE TCF 1000 provides the following product characteristics:

Technology	Phase Change
Appearance	White
Operating Temperature Range	up to 150ºC
Application	Thermal management
Typical Assembly Applications	• DC-DC converters • Solid state relays • Power transistors • Power modules • IGBT • RF components • Used between any non-isolated heat dissipating component and a heat sink or chassis

LOCTITE TCF 1000 phase-change thermal interface material is suitable for use between a heat sink and a variety of heat generating components. This product is supplied as a dry compound coated onto an aluminum 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, and in conjunction with component mounting pressure, air is expelled from the interface, reducing thermal impedance, performing as a highly efficient thermal transfer material.

LOCTITE TCF 1000 is a superior replacement for messy thermal greases and similar interface compounds.

MATERIAL PROPERTIES

LOCTITE TCF 1000 is supplied in a range of substrate thicknesses to match surface finish and flatness considerations in the interface area. Data for the two most common thicknesses is supplied below.

AL		
Substrate Type	Aluminum	
Thickness:		
Substrate	mm (inches)	0.051 (0.002)
Compound Thickness, Nominal, each side	mm (inches)	0.013 (0.0005)
Total	mm (inches)	0.076 (0.003)
Thermal Impedance, ASTM-D-5470		
@ 20 psi	ºC-cm² /W (ºC-in² /W)	0.194 (0.03)
@ 100 psi	ºC-cm² /W (ºC-in² /W)	0.129 (0.02)
:		
@ 20 psi	ºC-cm² /W (ºC-in² /W)	0.194 (0.03)
@ 100 psi	ºC-cm² /W (ºC-in² /W)	0.129 (0.02)

ALH		
Substrate Type	Aluminum	
Thickness:		
Substrate	mm (inches)	0.051 (0.002)
Compound Thickness, Nominal, each side	mm (inches)	0.025 (0.001)
Total	mm (inches)	0.101 (0.004)
Thermal Impedance, ASTM-D-5470		
@ 20 psi	ºC-cm² /W (ºC-in² /W)	0.374 (0.058)
@ 100 psi	ºC-cm² /W (ºC-in² /W)	0.232 (0.036)
:		
@ 20 psi	ºC-cm² /W (ºC-in² /W)	0.374 (0.058)
@ 100 psi	ºC-cm² /W (ºC-in² /W)	0.232 (0.036)

PHYSICAL PROPERTIES

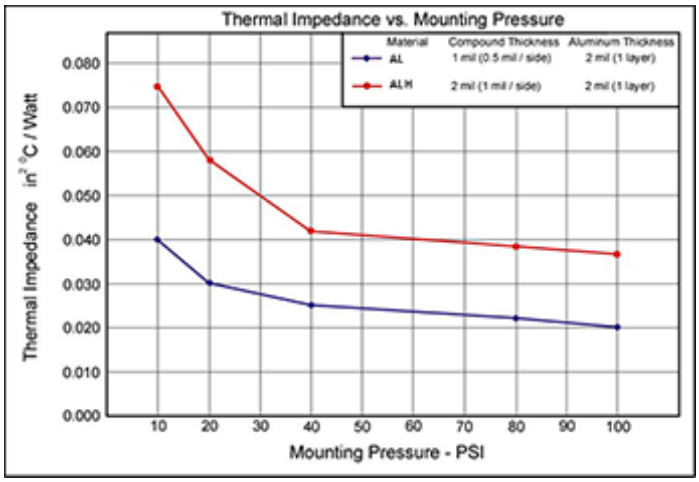
Phase Change Temperature, °C	60
Viscosity above phase change temperature	Thixotropic

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 64microinches and the flatness is 0.002 in/in. The power level is 80 watts.

Thermal Impedence vs. Mounting Pressure Graph



GENERAL INFORMATION

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

SURFACE CONDITIONS

Different versions of LOCTITE TCF 1000 have been developed to address the variables associated with a wide range of applications. As a general recommendation, we suggest:

Surface Finishes	64 microinches or better 1.6 microns or better
Surface Flatness	0.002 inches/inch or better 0.002 cm/cm or better

DIRECTIONS FOR USE

1. LOCTITE TCF 1000 is completely re-workable. No foreign residue remains after disassembly. A replacement pad can be installed without further cleaning.
2. If a clean surface is required, any presence of a compound can be easily removed with mineral spirits.
3. LOCTITE TCF 1000 is not sensitive to mounting orientation due to its thixotropic rheology.
4. This product does not contain silicones and will not migrate from the interface area.

AVAILABILITY

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

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

LOCTITE TCF 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.

STORAGE:

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

Optimal Storage: 23 °C. Storage greater than 40 °C can adversely affect product properties.

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

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
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 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 0.5