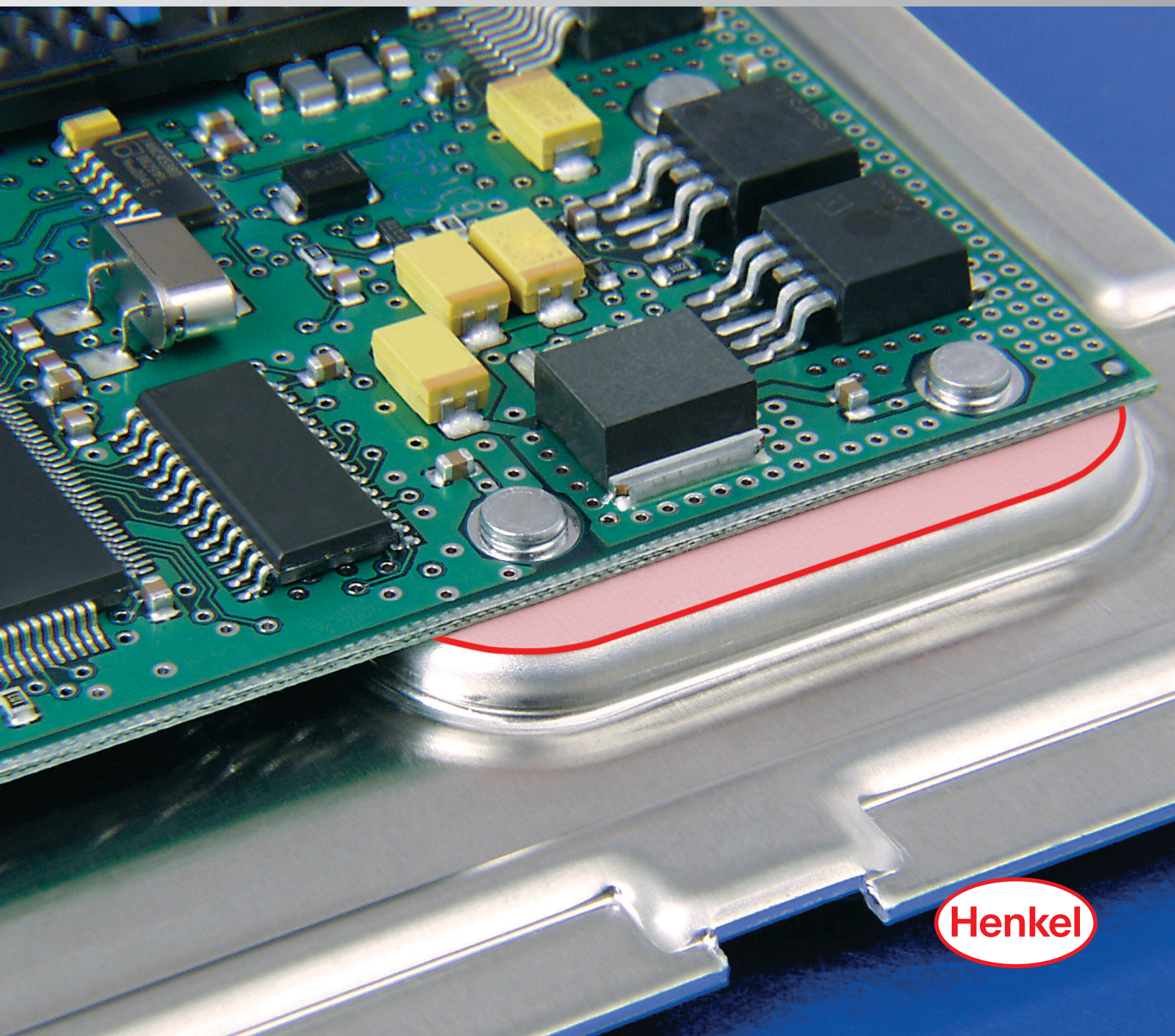
LOCTITE®

BERGQUIST®

Thermal Management Materials



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INTRODUCTION

To address the thermal demands of today's electronic devices, Henkel has developed a complete portfolio of high-performance, user-friendly products. Effective control of heat is an increasing concern among today's electronic device manufacturers and, as products become smaller, the need to dissipate damaging heat effectively will be greater than ever.

Of course, each application is unique and its requirements specific, which is why Henkel has formulated a comprehensive range of thermal management materials to suit a variety of current and future heat control needs. Under the banner of the well-respected LOCTITE and BERGQUIST brands, Henkel's thermal management materials include:

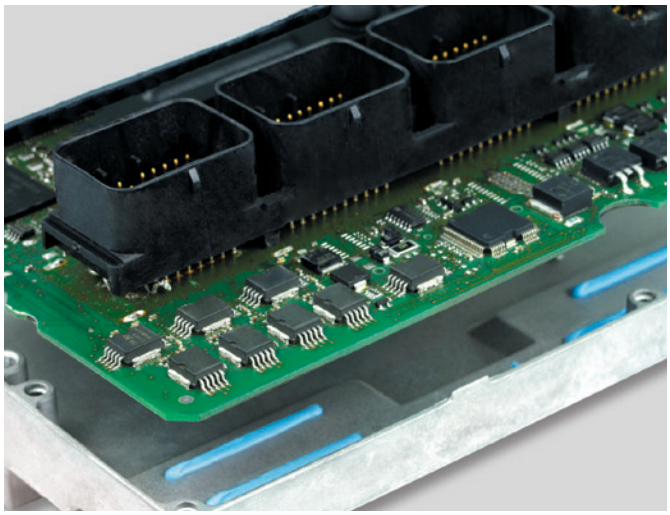
THERMAL ADHESIVES

- Tapes
- Film
- Liquids

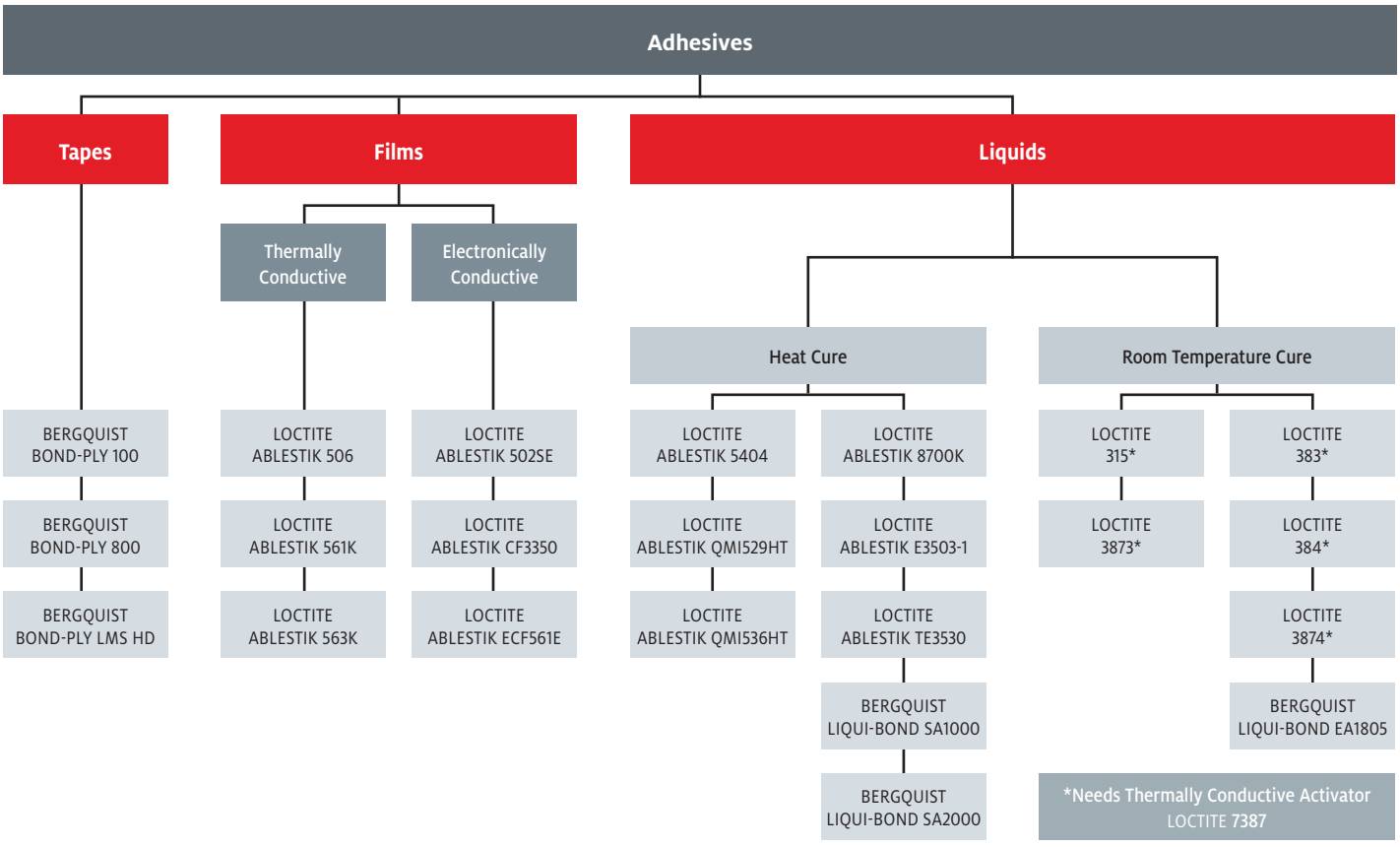
NON-THERMAL ADHESIVES

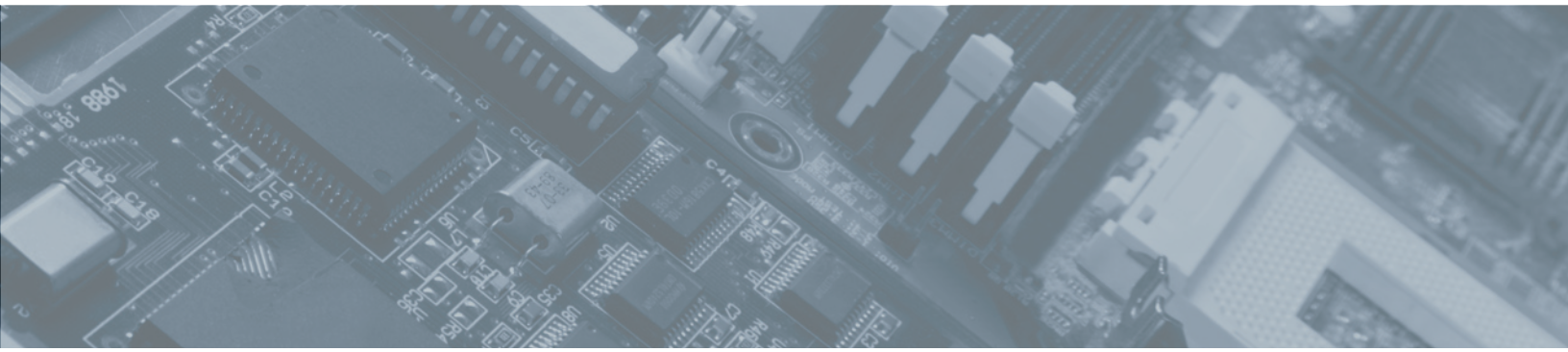
- Pads
- Gap Fillers
- Phase-Change Materials
- Greases

As consumer demand and product capability continue to drive greater function within ever-decreasing footprints, effectively controlling the thermal load will be critical to ensuring long product life cycles and expected reliability. That's why today's electronics manufacturers are increasingly turning to Henkel for trusted, proven thermal management solutions.



PRODUCT PORTFOLIO





Non-Adhesives

Thin Pads

Electrically Insulating

- BERGQUIST SIL PAD 400
- BERGQUIST SIL PAD 900S
- BERGQUIST SIL PAD 1100ST
- BERGQUIST SIL PAD 1200
- BERGQUIST SIL PAD 1500ST
- BERGQUIST SIL PAD 2000
- BERGQUIST SIL PAD K-10

Non-Electrically Insulating

- BERGQUIST Q PAD II
- BERGQUIST Q PAD 3

Gap Fillers

Pads

- BERGQUIST GAP PAD VOUS
- BERGQUIST GAP PAD 1000SF
- BERGQUIST GAP PAD 1450
- BERGQUIST GAP PAD 1500
- BERGQUIST GAP PAD 1500R
- BERGQUIST GAP PAD 2200SF
- BERGQUIST GAP PAD 3004SF
- BERGQUIST GAP PAD 3500ULM
- BERGQUIST GAP PAD HC3.0
- BERGQUIST GAP PAD HC5.0

Liquids

- BERGQUIST Gap Filler 1000SR
- BERGQUIST Gap Filler 1500
- BERGQUIST Gap Filler 1500LV
- BERGQUIST Gap Filler 3500LV
- BERGQUIST Gap Filler 3500S35
- BERGQUIST Gap Filler 4000
- BERGQUIST LIQUIFORM 3500

Phase-Change Materials

Pads

- BERGQUIST HI-FLOW 300P
- BERGQUIST HI-FLOW 565UT
- BERGQUIST HI-FLOW 650P
- LOCTITE EIF1000
- LOCTITE TCF1000
- LOCTITE TCF2000 AF
- LOCTITE TCF4000 PXF

Liquids

- LOCTITE TCP4000 SERIES
- LOCTITE TCP7000

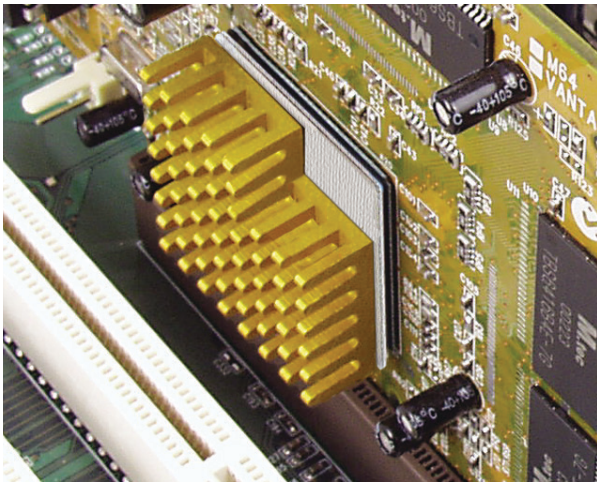
Greases

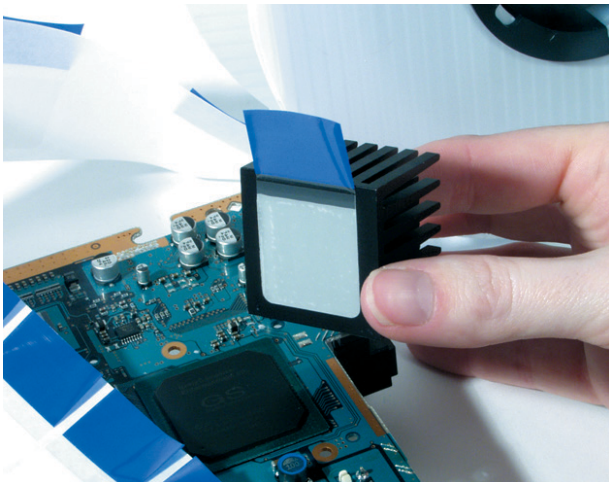
- LOCTITE TC4
- LOCTITE TC8M
- LOCTITE TCP8175M1
- LOCTITE TG100

ADHESIVES | TAPES

The BOND-PLY family of materials are thermally conductive and electrically isolating. BOND-PLY is available in a PSA or laminating format. BOND-PLY provides for the decoupling of bonded materials with mismatched thermal coefficients of expansion. BOND-PLY provides:

- A replacement to heat cure adhesives
- A replacement to screw mounting
- A replacement to clip mounting





Tapes

- BERGQUIST BOND-PLY 100
- BERGQUIST BOND-PLY 800
- BERGQUIST BOND-PLY LMS HD

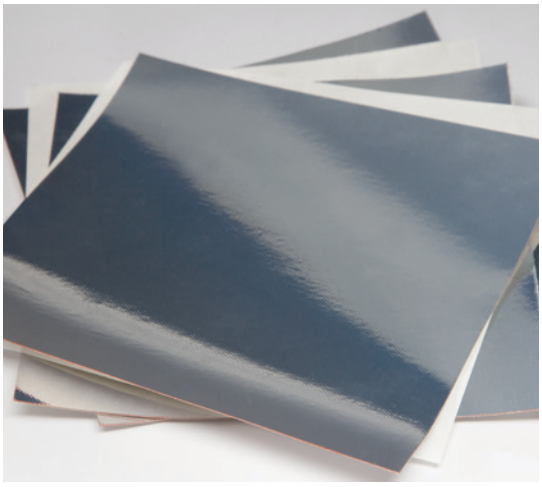
PRODUCT	DESCRIPTION	COLOR	THICKNESS (in.)	LAP SHEER@ RT (psi)	BREAKDOWN VOLTAGE (VAC)	FLAME RATING (UL 94)	THERMAL CONDUCTIVITY (W/m-K)	THERMAL IMPEDANCE (°C-in.²/W)
Tapes								
BERGQUIST BOND-PLY 100	Fiberglass-reinforced pressure-sensitive adhesive tape	White	0.005, 0.008, 0.011	100	3,000 6,000 8,500	V-0	0.8	0.52 0.78 1.01
BERGQUIST BOND-PLY 800	Fiberglass-reinforced pressure-sensitive adhesive tape	Gray	0.005, 0.008	150	4,000 6,000	V-0	0.8	0.60 0.72
BERGQUIST BOND-PLY LMS HD	Silicone, high-durability laminate material	Yellow	0.010, 0.012	200	5,000	V-0	1.4[1]	2.1[2] (°C/W)

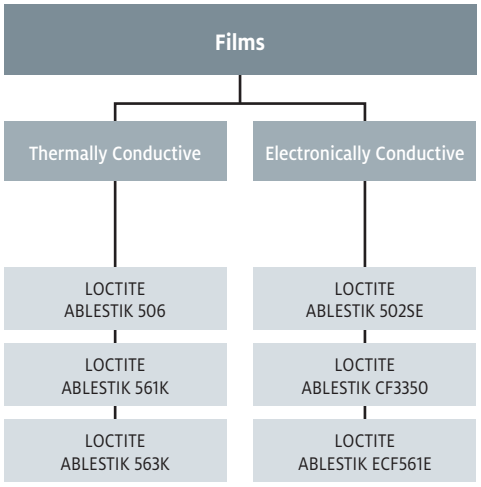
(1) The ASTM D5470 (BERGQUIST modified) test procedure was used on post-cured LMS-HD material. The recorded value includes interfacial thermal resistance. These values are given for customer reference only.

(2) TO-220 Thermal Performance testing, per the BERGQUIST RD2010 specification for laminates, was completed on pre-laminated TO-220 assemblies. Lamination was completed at the pressure levels referenced above. Actual pressure during performance testing was limited to the inherent weight distribution of the TO-220 component. No additional pressure was applied.

ADHESIVES | FILMS

When there is a requirement for bonding large areas or complex parts together, thermal adhesive films are the preferred materials. Larger bonding areas are problematic for liquid-based mediums as voids may result; films, however, deliver uniform, void-free bondlines and controlled thicknesses. Supplied in custom, pre-cut formats, Henkel's line of thermal adhesive films offers a clean, waste-free, easily-processed solution with a low total, cost of ownership in thermally and electrically-conductive formulas.

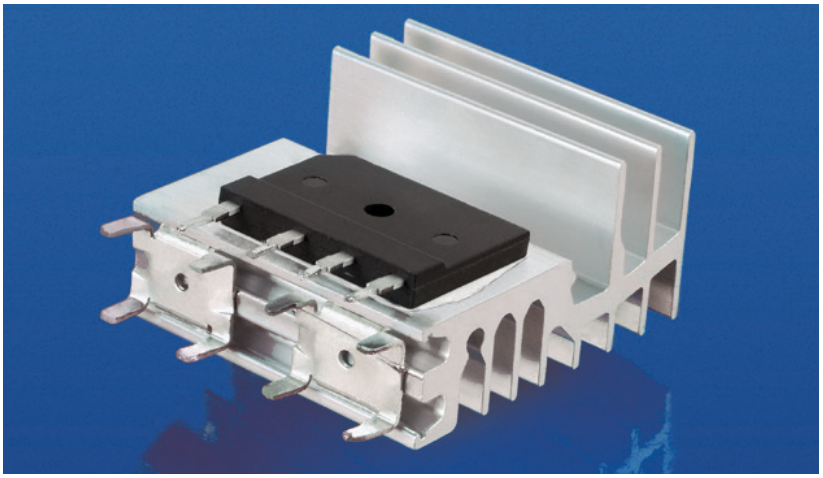


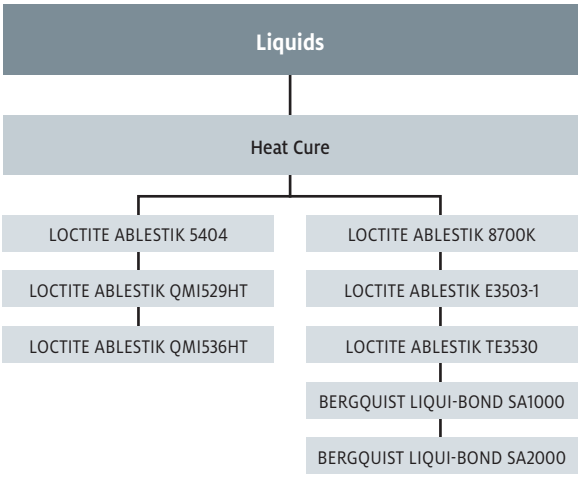


PRODUCT	DESCRIPTION	TENSILE STRENGTH LAP SHEAR (psi)	THERMAL CONDUCTIVITY (W/mK)	VOLUME RESISTIVITY (ohms-cm)	PRIMARY CURE CYCLE	SHELF LIFE	FILM THICKNESS AVAILABLE (mil)
Thermally Conductive							
LOCTITE ABLESTIK 506	Flexible film adhesive designed for bonding mismatched CTE materials. Slight tack can simplify assembly	1,200	0.9	7×10^{12}	1 hr. @ 150°C	6 months @ -40°C	4, 5, 6
LOCTITE ABLESTIK 561K	High adhesion strength with excellent flexibility for bonding mismatched CTE materials	3,300	0.9	9×10^{12}	30 min. @ 150°C	1 year @ -40°C	4, 5, 6
LOCTITE ABLESTIK 563K	Electrically insulating film with high thermal conductivity and adhesion strength. Available either unsupported or with a fiberglass carrier	3,000	1	1×10^{13}	30 min. @ 150°C	1 year @ -40°C	2, 3, 4, 5, 6
Electrically Conductive							
LOCTITE ABLESTIK 502SE	Sister formulation to CF3350 that has been certified to MIL-STD-883, Method 5011	2,500	6.5	2×10^{-4}	30 min. @ 150°C	6 months @ 5°C	2, 3, 4, 5, 6
LOCTITE ABLESTIK CF3350	Silver-filled film with an excellent balance of adhesion strength, electrical and thermal conductivity, and processability. It is especially suited for RF applications	3,400	7	2×10^{-4}	30 min. @ 150°C	9 months @ 5°C	2, 4
LOCTITE ABLESTIK ECF561E	Most flexible of the fiberglass-supported, electrically conductive products	2,000	1.6	6.0×10^{-3}	1 hr. @ 150°C	1 year @ -40°C	4, 5, 6

ADHESIVES | LIQUIDS

Henkel's liquid adhesives provide robust mechanical attachment, allowing for the elimination of fasteners such as screws and clips, which also helps reduce device size and weight to align with the trend toward electronics miniaturization. These form-in-place elastomers are ideal for coupling "hot" electronic components mounted on PC boards with an adjacent metal case or heat sink. With the ability to maintain thin bondlines and excellent thermal paths, LOCTITE and BERGQUIST brand liquid adhesives provide superb thermal management.

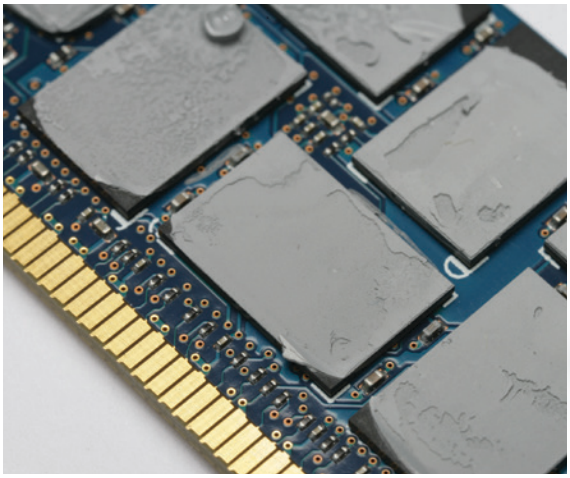




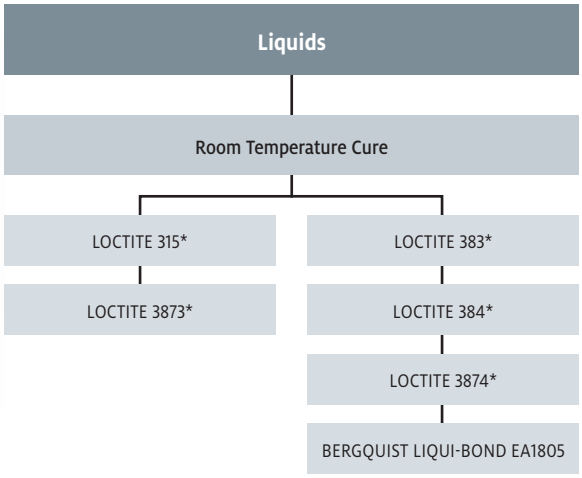
PRODUCT	DESCRIPTION	CURE TYPE	CURE SCHEDULE	VISCOSITY (cP)	THERMAL CONDUCTIVITY (W/mK)	VOLUME RESISTIVITY (ohms-cm)	SHELF LIFE
Heat Cure							
LOCTITE ABLESTIK 5404	Self-shimming, flexible silicone adhesive for high-temperature-resistant applications such as ceramic boards	Heat	10 min. @ 150°C	Paste	1	2.9×10^{14}	5 months @ 5°C
LOCTITE ABLESTIK QMI529HT	High thermal, electrically conductive, silver-filled adhesive	Heat	Snap Cure (single zone): 60 sec. @ 185°C. Oven cure: 30 min. @ 185°C	18,500	6	4×10^{-5}	12 months@ -40°C
LOCTITE ABLESTIK QMI536HT	Boron nitride-filled, non-electrically conductive paste	Heat	Skip Cure: 0.8 sec. @ 150°C Oven Cure: 15 min. @ 15°C	13,000	0.9	1.0×10^{13}	12 months@ -40°C
LOCTITE ABLESTIK 8700K	Mil standard certified, one-component, thermally-conductive epoxy adhesive	Heat	60 min. @ 175°C 2 hrs. @ 160°C	45,000	0.5	3.0×10^{14}	9 months @ -40°C
LOCTITE ABLESTIK E3503-1	Smooth paste assuring minimum bondline thickness for lower overall thermal resistance	Heat	30 min. @ 100°C 10 min. @ 120°C 5 min. @ 150°C	60,000	1	1.0×10^{14}	6 months @ -18°C to -25°C
LOCTITE ABLESTIK TE3530	One-component, low-temperature curing, thermally-conductive epoxy adhesive	Heat	30 min. @ 100°C	60,000	2.3	1.0×10^{15}	6 months @ -18°C to -25°C
BERGQUIST LIQUI-BOND SA1000	One-component, thermally-conductive, silicone adhesive	Heat	20 min. @ 125°C 10 min. @ 150°C	125,000	1.0	1.0×10^{10}	6 months @ 10°C
BERGQUIST LIQUI-BOND SA2000	One-component, thermally-conductive silicone adhesive	Heat	20 min. @ 125°C 10 min. @ 150°C	200,000	2.0	1.0×10^{11}	6 months @ 10°C

ADHESIVES | LIQUIDS

Henkel's liquid adhesives, featuring activator and room temperature cure schedules, provide robust mechanical attachment allowing for the elimination of fasteners such as screws and clips. Typical applications include bonding transformers, transistors and other heat-generating electronic components to printed circuit board assemblies or heat sinks. With the ability to maintain thin bondlines and excellent thermal paths, LOCTITE and BERGQUIST brand liquid adhesives provide superb thermal management.



LOCTITE 7387 Cure Activator

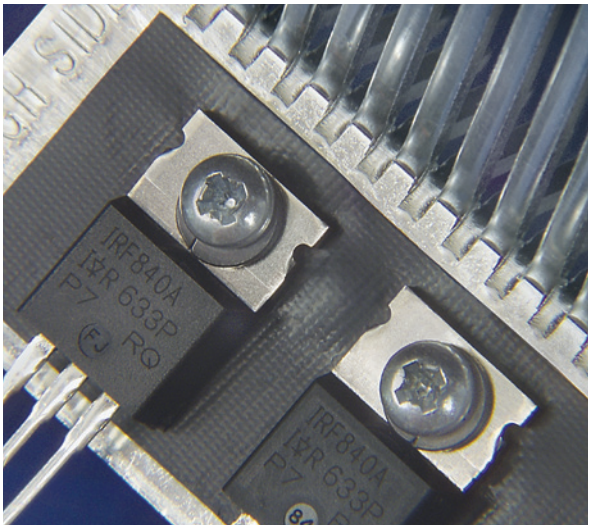


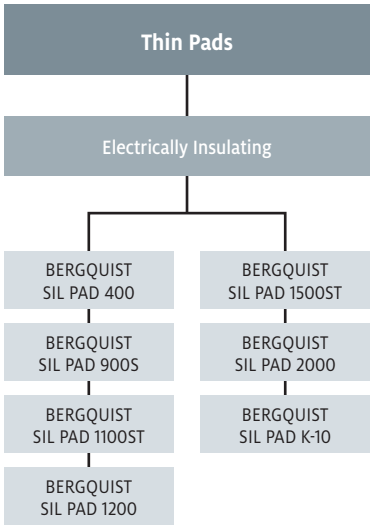
PRODUCT	DESCRIPTION	CURE TYPE	CURE SCHEDULES	VISCOSITY (cP)	THERMAL CONDUCTIVITY (W/mK)	VOLUME RESISTIVITY (ohms-cm)	SHELF LIFE
Room-Temperature Cure							
LOCTITE 315*	A self-shimming, thermally-conductive, one-part adhesive for bonding electrical components to heat sinks with an insulating gap	Activator (7387)	24 to 72 hrs. @ 20°C	600,000	0.81	1.3×10^{12}	9 months @ 5°C
LOCTITE 3873*	Self-shimming: use with activator 7387. High-bonding strength for heat sink application	Activator (7387)	24 to 72 hrs. @ 20°C	200,000	1.25	4.3×10^{14}	21 months @ 5°C
LOCTITE 383*	High-strength, room-temperature, curing adhesive for permanent assemblies	Activator (7387)	24 to 72 hrs. @ 20°C	500,000	0.6	5.2×10^{11}	9 months @ 5°C
LOCTITE 384*	Repairable, room-temperature, curing adhesive utilized for parts subject to disassembly	Activator (7387)	24 to 72 hrs. @ 20°C	100,000	0.76	1.3×10^{12}	9 months @ 5°C
LOCTITE 3874*	Fast-curing, high-conductivity adhesive for bonding heat-generating devices to thermal spreader "without glass beads"	Activator (7387)	24 to 72 hrs. @ 20°C	800,000	1.25	4.3×10^{14}	9 months @ 5°C
BERGQUIST LIQUI-BOND EA1805	Two-component, epoxy-based, liquid-dispensable adhesive	Room or elevated temperature	10 hrs. @ 25°C 10 mins. @ 125°C	Part A - 60 Part B - 62	1.8	1×10^{14}	6 months @ 25°C

*LOCTITE 7387 Activator used in combination with LOCTITE brands 315, 383, 384, 3873 and 3874

NON-ADHESIVES | THIN PADS

More than 35 years ago, Henkel set the standard for elastomeric thermal interface materials with the introduction of SIL PAD. Today, Henkel is a world leader with a complete family of SIL PAD materials to meet the critical needs of a rapidly changing electronics industry. In their many forms, SIL PAD thermally conductive insulators continue to be a clean and efficient alternative to mica, ceramics, or grease for a wide range of electronic applications. Henkel application specialists work closely with customers to specify the proper SIL PAD material for every unique thermal management requirement.

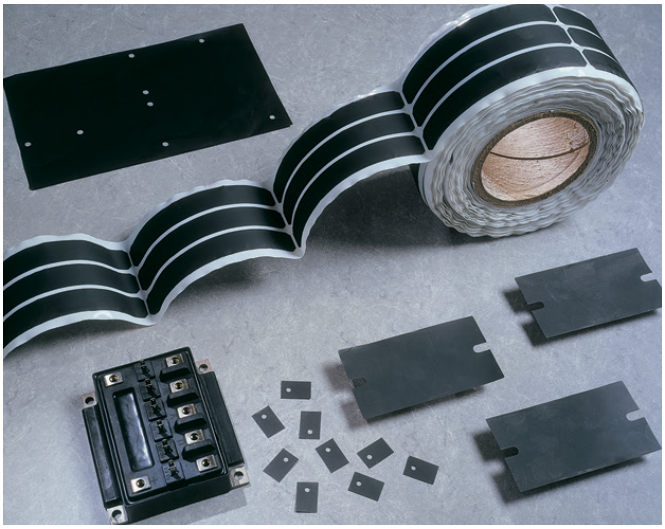


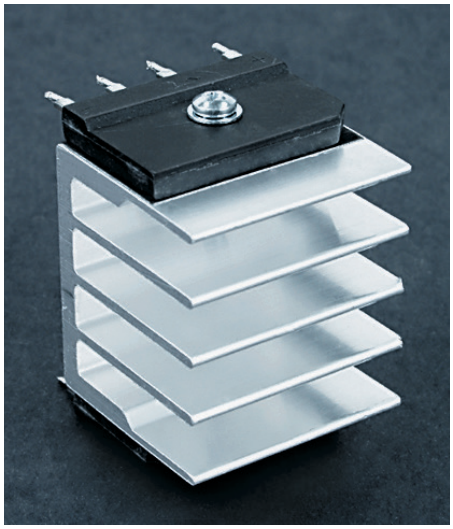


PRODUCT	DESCRIPTION	COLOR	THICKNESS (in.)	VOLTAGE BREAKDOWN (VAC)	VOLUME RESISTIVITY (Ohm-Meter)	THERMAL CONDUCTIVITY (W/m-K)	THERMAL IMPEDANCE @ 50 PSI (°C-in.²/W)	FLAME RATING (UL 94)
Electrically Insulating								
BERGQUIST SIL PAD 400	The original fiberglass-reinforced, silicone-based insulator	Grey	0.007 0.009	3,500 4,500	1×10^{11}	0.9	1.13	V-0
BERGQUIST SIL PAD 900S	Value fiberglass-reinforced, silicone-based insulator	Pink	0.009	5,500	1×10^{10}	1.6	0.61	V-0
BERGQUIST SIL PAD 1100ST	Low-pressure, fiberglass-reinforced, silicone-based insulator	Yellow	0.012	5,000	1×10^{10}	1.1	0.66	V-0
BERGQUIST SIL PAD 1200	High-performance, fiberglass-reinforced, silicone-based insulator	Black	0.009 0.012 0.016	6,000	1×10^{9}	1.8	0.53	V-0
BERGQUIST SIL PAD 1500ST	Low-pressure, high-performance, silicone-based insulator	Blue	0.008	3,000	1×10^{11}	1.8	0.23	V-0
BERGQUIST SIL PAD 2000	Higher-performance, fiberglass-reinforced, silicone-based insulator. Designed for military and aerospace applications	White	0.010 0.015 0.020	4,000	1×10^{11}	3.5	0.33 0.37 0.55	V-0
BERGQUIST SIL PAD K-10	High-performance film-reinforced, silicone-based insulator	Beige	0.006	6,000	1×10^{12}	1.3	0.41	VTM-0

NON-ADHESIVES | THIN PADS

These materials are designed for those applications when maximum heat transfer is needed and electrical isolation is not required, which is the ideal thermal interface material to replace messy thermal-grease compounds.
Thin pads eliminate problems associated with grease, such as contamination of re-flow solder or cleaning operations. Unlike grease, Q-Pad II can be used prior to these operations. Q-Pad II also eliminates dust collection, which can cause possible surface shorting or heat buildup.





Thin Pads

Non-Electrically Insulating

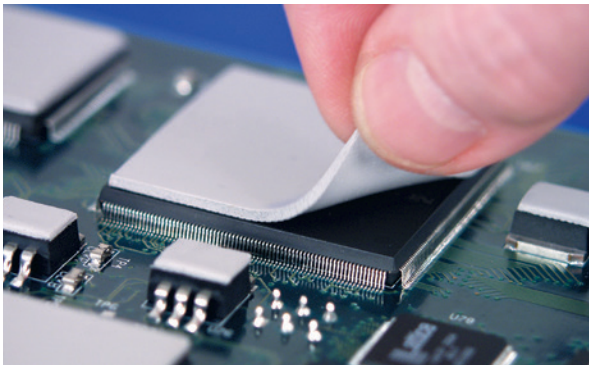
- BERGQUIST Q PAD II
- BERGQUIST Q PAD 3

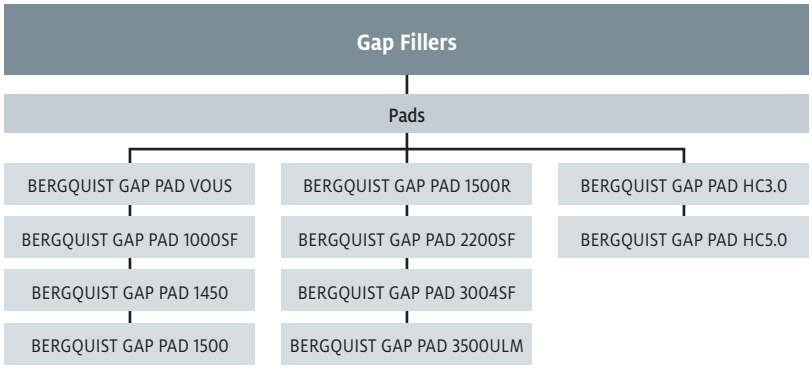
PRODUCT	DESCRIPTION	COLOR	THICKNESS (in.)	VOLTAGE BREAKDOWN (VAC)	VOLUME RESISTIVITY (Ohm-Meter)	THERMAL CONDUCTIVITY (W/m-K)	THERMAL IMPEDANCE @ 50 PSI (°C-in.²/W)	FLAME RATING (UL 94)
Non-Electrically Insulating								
BERGQUIST Q PAD II	Aluminum-foil substrate, silicone-based grease replacement	Black	0.006	Non-insulating	1×10^2	2.5	0.22	V-0
BERGQUIST Q PAD 3	Fiberglass-reinforced, silicone-based grease replacement	Black	0.005	Non-insulating	1×10^2	2.0	0.35	V-0

NON-ADHESIVES | GAP FILLERS

Henkel developed the GAP PAD thermal interface material family to meet the electronic industry's growing need for interface materials with greater conformability, higher thermal performance, and easier application.

GAP PAD provides an effective thermal interface between heat sinks and electronic devices where uneven surface topography, air gaps and rough surface textures are present.



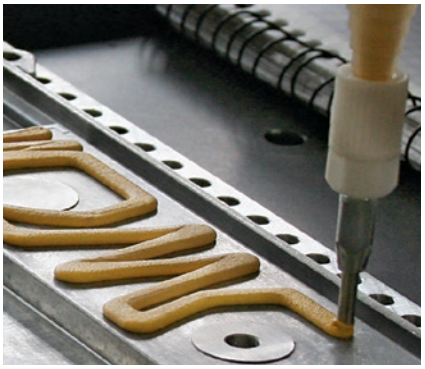


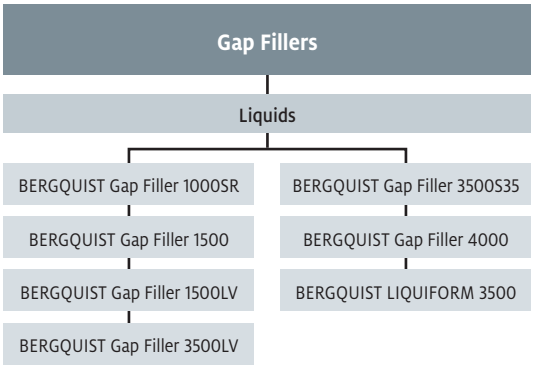
PRODUCT	DESCRIPTION	COLOR	THICKNESS (in.)	HARDNESS (Bulk Rubber) (Shore oo) (1)	VOLTAGE BREAKDOWN (VAC)	VOLUME RESISTIVITY (Ohm-Meter)	THERMAL CONDUCTIVITY (W/m-K)	THERMAL IMPEDANCE (% Strain) (°C-in.²/W)			FLAME RATING (UL 94)
Pads											
BERGQUIST GAP PAD VOUS	Fiberglass-carrier, silicone-based pad	Mauve/Pink	0.020 to 0.250	5	6,000	1 X 10^{11}	1.0	10%	20%	30%	V-0
								1.97	1.87	1.68	
BERGQUIST GAP PAD 1000SF	Fiberglass-carrier, silicone-free polymer pad	Green	0.010 to 0.125	40	>6,000	1 X 10^{10}	0.9	—			V-1
BERGQUIST GAP PAD 1450	Permanent liner, silicone-based pad	Light Pink	0.020 to 0.125	30	>6,000	1 X 10^{9}	1.3	—			V-0
BERGQUIST GAP PAD 1500	Unreinforced, silicone-based pad	Black	0.020 to 0.200	40	>6,000	1 X 10^{11}	1.5	10%	20%	30%	V-0
								1.62	1.50	1.33	
BERGQUIST GAP PAD 1500R	Fiberglass-reinforced, silicone-based pad	Black	0.010 to 0.020	45	>6,000	1 X 10^{11}	1.5	10%	20%	30%	V-0
								1.07	0.88	0.82	
BERGQUIST GAP PAD 2200SF	Fiberglass-carrier, silicone-free polymer pad	Green	0.010 to 0.125	70	>5,000	1 X 10^{8}	2.0	—			V-0
BERGQUIST GAP PAD 3004SF	Permanent liner, silicone-free polymer pad	Light Grey	0.010 to 0.125	70	>5,000	1 X 10^{11}	3.0	—			V-0
BERGQUIST GAP PAD 3500ULM	Ultra-low modulus, fiberglass-reinforced, silicone-based pad	Grey	0.020 to 0.125	—	>5,000	1 X 10^{10}	3.5	10%	20%	30%	V-0
								0.50	0.44	0.39	
BERGQUIST GAP PAD HC3.0	Fiberglass-reinforced, silicone-based pad	Blue	0.020 to 0.125	15	>5,000	1 X 10^{10}	3.0	10%	20%	30%	V-0
								0.57	0.49	0.44	
BERGQUIST GAP PAD HC5.0	Fiberglass-reinforced, silicone-based pad	Violet	0.020 to 0.125	35	>5,000	1 X 10^{10}	5.0	10%	20%	30%	V-0
								0.35	0.30	0.26	

NON-ADHESIVES | GAP FILLERS

Henkel's BERGQUIST brand of highly-engineered, thermally-conductive liquids are specifically designed to support optimized dispensing control with excellent thermal and mechanical performance. Dispensed in a liquid state, the material creates virtually zero stress on components. It can be used to interface and conform to the most intricate topographies and multilevel surfaces.

Henkel has teamed with the highly respected automated dispensing equipment companies of RAMPF, Scheugenpflug AG, bdtronic, and Graco to further assist our customers in creating an optimized dispensing process. Like Henkel, they are the best in the world at supplying intelligent world-class solutions. By joining in the "solutions partnership," we amplify our capabilities as the total solution provider.

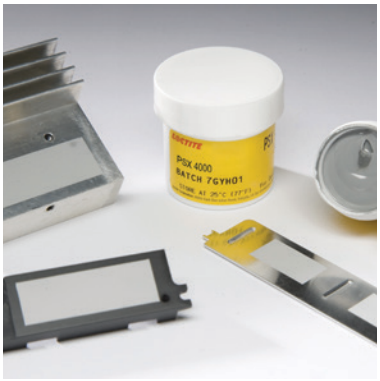


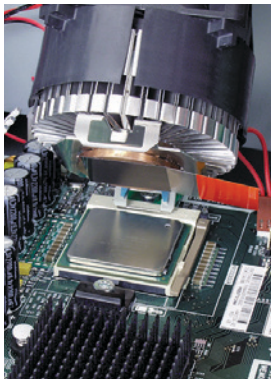


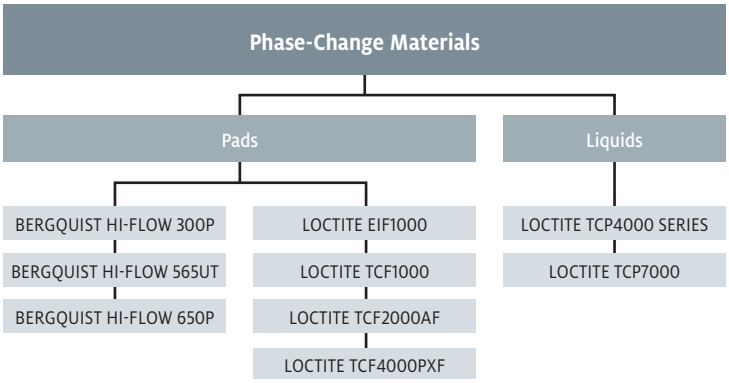
PRODUCT	DESCRIPTION	CURE TYPE	CURE SCHEDULES	VISCOSITY	THERMAL CONDUCTIVITY (W/m-K)	VOLUME RESISTIVITY	SHELF LIFE (months)
Liquids							
BERGQUIST Gap Filler 1000SR	Two-part, liquid gap-filling material featuring superior slump resistance	RT or Heat	20 hrs @ 25°C 10 mins @ 100°C	20 High Shear (Pa-s)	1.0	1 X 10^{11}	6
BERGQUIST Gap Filler 1500	Two-part, liquid gap-filling material with high-shear thinning for ease of dispensing	RT or Heat	5 hrs @ 25°C 10 mins @ 100°C	250,000 As Mixed (cPs)	1.8	1 X 10^{10}	6
BERGQUIST Gap Filler 1500LV	Two-part, liquid gap-filling material with significantly lower levels of silicone outgassing	RT or Heat	8 hrs @ 25°C 10 mins @ 100°C	75 High Shear (Pa-s)	1.8	1 X 10^{10}	6
BERGQUIST Gap Filler 3500LV	High-performance, two-part, liquid gap-filling material with significantly lower levels of silicone outgassing	RT or Heat	24 hrs @ 25°C 30 mins @ 100°C	45 High Shear (Pa-s)	3.5	1 X 10^{10}	5
BERGQUIST Gap Filler 3500S35	High-performance, two-part, liquid gap-filling material with superior softness	RT or Heat	15 hrs @ 25°C 30 mins @ 100°C	150,000 As Mixed (cPs)	3.6	1 X 10^{9}	5
BERGQUIST Gap Filler 4000	High-performance, two-part, liquid gap-filling material	RT or Heat	24 hrs @ 25°C 30 mins @ 100°C	50 High Shear (Pa-s)	4.0	1 X 10^{10}	5
BERGQUIST LIQUIFORM 3500	High-performance, one-part, cured gel with thixotropic properties	—	—	40 Dispense Rate (Grams/min)	3.5	1 X 10^{11}	6

NON-ADHESIVES | PHASE-CHANGE MATERIALS

Ideal for high-performance, solid-state devices such as CPUs, GPUs, IGBTs and discrete components. LOCTITE and BERGQUIST brand phase-change materials deliver on-demand performance with none of the drawbacks of traditional greases. These materials are solid at room temperature but melt and flow during device operation to provide a thin bond line and high reliability without the pump-out often experienced with some thermal greases. Phase-change materials offer an excellent alternative to grease.



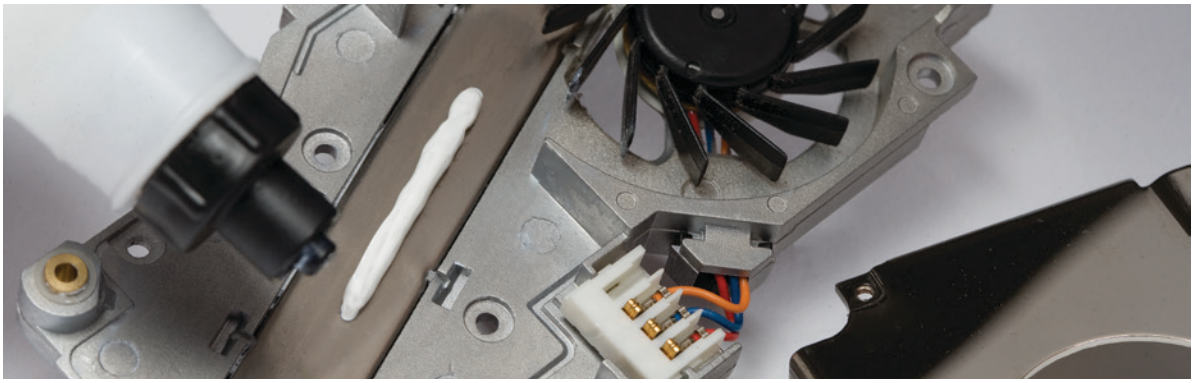




PRODUCT	DESCRIPTION	THERMAL IMPEDANCE	THERMAL CONDUCTIVITY (W/m-K)	PHASE CHANGE TEMP (°C)	VOLUME RESISTIVITY	DIELECTRIC BREAKDOWN VOLTAGE	THICKNESS (in.)
Pads							
BERGQUIST HI-FLOW 300P	Dry compound, coated on thermally-conductive polyimide film	0.13 (°C-in²/W @ 25 psi)	1.6	55	1 X 10^{12}	5,000	0.0040 0.0045 0.0050
BERGQUIST HI-FLOW 565UT	Naturally tacky, unreinforced phase-change material supplied in an easy-to-use tabulated pad	0.05 (°C-in²/W @ 25 psi)	3.0	52	N/A	N/A	0.005 0.010
BERGQUIST HI-FLOW 650P	One side is naturally tacky. Coated on thermally-conductive polyimide film	0.20 (°C-in²/W @ 25 psi) (.0045" thick)	1.5	52	1 X 10^{12}	5,000	0.0045 0.0050 0.0055
LOCTITE EIF1000	Phase-change material coated on thermally-conductive polyimide film	0.12 (°C-in²/W @ 80 psi)	0.45	60	N/A	4,500	KA=0.003 KB=0.005 K3=0.007
LOCTITE TCF1000	Phase-change material coated on aluminum foil	0.14 (°C-in²/W @ 80 psi)	1.0	60	1 X 10^{12}	N/A	AL=0.005 ALH=0.006
LOCTITE TCF2000AF	High-performance phase-change material coated on aluminum foil	TBD	3.0	51	N/A	N/A	0.005
LOCTITE TCF4000PXF	Non-silicone, reworkable phase-change material, free-standing film supplied between two release liners	0.019 (°C-in²/W @ 80 psi)	3.4	45	N/A	N/A	0.008
Liquids							
LOCTITE TCP4000 SERIES	Supplied as a paste that can be stenciled, needle-dispensed or screen-printed onto a heat sink, base plate or other surfaces	0.003 (°C-in²/W @ 80 psi)	3.4	45	N/A	N/A	0.0005 to 0.010+
LOCTITE TCP7000	Non-silicone and reworkable phase change material supplied in cartridges	TBD	>3.0	45	N/A	N/A	N/A

NON-ADHESIVES | GREASES

For manufacturers with a preference for traditional thermal greases, Henkel has several RoHS-compliant formulations. Used in high-performance applications where minimal bondline thickness is essential for high-thermal performance, greases offer immediate functionality upon application. In addition, greases have a tendency to compensate for voids easily so they are a particularly viable solution for devices that have flatness or coplanarity issues. Available in cartridges or bulk containers, Henkel's thermal greases include high-performance, high-temperature reliability, silicone-free and water-cleanable formulas.



Grease

- LOCTITE TC4
- LOCTITE TC8M
- LOCTITE TCP8175M1
- LOCTITE TG100

PRODUCT	DESCRIPTION	THERMAL CONDUCTIVITY (W/mK)	VOLUME RESISTIVITY (ohms-cm)	DIELECTRIC STRENGTH (V/mil)	THICKNESS (in.)
Greases					
LOCTITE TC4	Thermally-conductive, high-temperature silicone thermal grease	0.6	1×10^{13}	500	0.0005 to 0.010+
LOCTITE TC8M	High-thermal conductivity, high-temperature thermal grease	1.3	1×10^{13}	500	0.0005 to 0.010+
LOCTITE TCP8175M1	High-thermal conductivity, high-temperature stability, high-thixo (or non-sag), electrically-insulating, self-shimming silicone thermal grease	1.3	1.00×10^{15}	480	7 mil spacers
LOCTITE TG100	Ultra-high-performance thermal grease	3.4	N/A	N/A	0.0005 to 0.010+

LOCTITE®

BERGQUIST®

AMERICAS

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