Press Release

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10.0 W/m-K BERGQUIST® LIQUI FORM Gel Tackles Heat Management Challenges in High Bandwidth Systems

High Thermal Conductivity TIM from Henkel Addresses Reliability Demands Across Digital Applications

Irvine, CA – Staying ahead of thermal management requirements for increasingly challenging datacom, telecom and industrial automation applications, Henkel today announced the commercialization of its latest gel thermal interface material (TIM), BERGQUIST® LIQUI FORM TLF 10000. The one-part, high thermal conductivity dispensable gel is designed to provide robust heat transfer for high-power electronic components, improving operational efficiency and extending lifetime system reliability.

Larger, higher-power devices such as ASICs and FPGAs are the norm in 5G telecom infrastructure gear, data center switches, routers and servers, as well as electric vehicle (EV) infrastructure and industrial automation electronics. As component density and complexity increase in response to faster data processing and digitalization requirements, higher wattage thermal output must be controlled to deliver dependable performance. BERGQUIST LIQUI FORM TLF 10000 provides 10.0 W/m-K thermal conductivity and is ideal for applications where environments can be extreme or unpredictable and reliability is critical.

According to IDTechEx Senior Technology Analyst, Dr. James Edmondson, process-friendly, high thermal conductivity materials are a necessity to bridge production and performance expectations: “The push toward digital, data-driven control across

market sectors has given rise to high power density component designs that can deliver exceptional processing speeds," he says. "This includes many applications – from 5G baseband units to small cells and Wi-Fi 6E devices in urban areas to EV mobility to AI and robotic technologies—and they all require reliable thermal management solutions that are rugged enough to withstand dynamic environments, positioning uncertainty and high wattages. Our market research confirms the need for dispensable, high thermal conductivity TIMs that can meet today's performance and volume processing demands and thermal gels have proven to be an effective solution."

Not only is BERGQUIST LIQUI FORM TLF 10000's thermal capability notable, but the silicone gel material delivers on a host of other requirements for mass production of high-reliability electronics. Advantages include:

- **Reliability:** High gap stability for gaps ranging from 0.5 to 1.5 mm; excellent thermal cycling capability.
- **Thermal transfer:** Low thermal impedance of 0.45 Kcm2/W at 0.5 mm bond line thickness; high thermal conductivity of 10.0 W/m-K.
- **Excellent cycle time and waste reduction:** Fast and easy dispensing and compatibility with a wide range of dispensing equipment options; stable viscosity for less material waste.
- **Low stress:** Lower dispensing pressure and assembly force place less stress on components.

"Fast data transfer and immediate information access are necessities for modern-day life," concludes Henkel Data & Telecom Global Head of Market Strategy, Wayne Eng. "Components and systems are becoming more powerful to meet the high bandwidth and data processing demand and their dependable performance relies on optimized function. Henkel has developed a unique TIM gel solution that nearly doubles the thermal performance of its predecessor while balancing exceptional heat-dissipating capability with flexible production characteristics. We have taken a leading role in the

TIM gel space and continue to innovate beyond present-day requirements to deliver next-generation performance."

For more information about BERGQUIST LIQUI FORM TLF 10000 or any of Henkel's TIM solutions, visit https://www.henkel-adhesives.com/us/en/product/thermal-gels/bergquist_liqui_formtlf10000.html.

About Henkel in North America
In North America, Henkel operates across its three business units: Adhesive Technologies, Beauty Care, and Laundry & Home Care. Its portfolio of well-known consumer and industrial brands includes Schwarzkopf® hair care, Dial® soaps, Persil®, Purex®, and all® laundry detergents, Snuggle® fabric softeners as well as Loctite®, Technomelt® and Bonderite® adhesives. With sales close to 6 billion US dollars (5 billion euros) in 2021, North America accounts for 25 percent of the company's global sales. Henkel employs over 8,000 people across the U.S., Canada and Puerto Rico. For more information, please visit www.henkel-northamerica.com, and on Twitter @Henkel_NA.

About Henkel
Henkel operates globally with a well-balanced and diversified portfolio. The company holds leading positions with its three business units in both industrial and consumer businesses thanks to strong brands, innovations and technologies. Henkel Adhesive Technologies is the global leader in the adhesives market – across all industry segments worldwide. In its Laundry & Home Care and Beauty Care businesses, Henkel holds leading positions in many markets and categories around the world. Founded in 1876, Henkel looks back on more than 140 years of success. In 2021, Henkel reported sales of more than 20 billion euros and adjusted operating profit of about 2.7 billion euros. Henkel employs about 53,000 people globally – a passionate and highly diverse team, united by a strong company culture, a common purpose to create sustainable value, and shared values. As a recognized leader in sustainability, Henkel holds top positions in many international indices and rankings. Henkel's preferred shares are listed in the German stock index DAX. For more information, please visit www.henkel.com.

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