

Press Release

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Novel test vehicle addresses miniaturization realities

Henkel Develops Non-Proprietary Solder Paste Analysis Toolkit for Modern Process Complexities

As a leading solder materials innovator, Henkel recognizes the need for more holistic solder paste process analysis, especially as device miniaturization and finer particle size solders become mainstream. While many suppliers and manufacturers use proprietary solder material evaluation tools, there is a requirement for easily-implemented, standardized test vehicles that address the realities of today's manufacturing complexities, particularly in the process areas of printing and reflow. The electronics business of Henkel Adhesive Technologies has developed such a tool.

"As assembly dimensions have dramatically decreased in the last ten years, the influence of solder paste formulation effectiveness has increased," explains Doug Dixon, Global Marketing Director at Henkel. "As such, evaluating the many material properties – from print characteristics and stencil behavior to reflow performance and reliability – has become more challenging. The objective of this work was to develop a robust solder paste evaluation tool that integrates current and future market requirements, while providing a simple, off-the-shelf solution for PCB assemblers."

A cooperative effort between industry specialists in the disciplines of material formulation, statistical evaluation and process engineering, the new solder test vehicle offers a turnkey solder evaluation tool. PCB design, a complete bill of materials (BOM), full programming documentation, set-up and test methods and step-by-step directions for a designed experiment are all incorporated.

Considering current and future market requirements, the solder evaluation tool integrates area arrays down to 0.3 mm pitch, 0.4 mm pitch bottom terminated components (BTCs) and a variety of discretes from 1206s down to 008004s. The unpopulated side of the board offers a design to evaluate slump, spread, solder balling, SIR and print to fail (PTF). Balancing the 22 material properties to be tested along with BOM and labor costs, the PCB and test methods were intentionally engineered for efficiency, providing maximum data while minimizing the time investment. A user-defined scorecard that prioritizes various solder paste characteristics and weightings summarizes rating information to indicate the best solder paste for a specific operation.

“There is often hesitance to change solder paste formulations for a variety of reasons,” says Dixon in closing, noting that challenging and time-consuming qualification procedures frequently deter transitioning to a more capable material. “Access to a simple method for determining the best solder material for a particular process enables fast implementation for better yield and reliability outcomes. For assemblers who need or want to update solder formulations on a regular basis, this new test vehicle offers an efficient and effective approach for material qualification.”

The Henkel-developed solder evaluation kit will be available through select, third-party suppliers. To learn more, follow [this link](#) to view a recent Henkel webinar about the new analysis tool.

About Henkel in North America

Henkel operates across its three business units – Adhesive Technologies, Beauty Care and Laundry & Home Care – in North America. Its portfolio of well-known consumer and industrial brands includes Schwarzkopf® hair care, Dial® soaps, Right Guard® antiperspirants, professional hair care brand Sexy Hair®, Persil®, Purex® and all® laundry detergents, Snuggle® fabric softeners as well as Loctite®, Technomelt® and Bonderite® adhesives. North America is an important region for Henkel: With sales of around 5.8 billion US dollars (5.2 billion euros) in 2017, North America accounts for 26 percent of the company's global sales. Henkel employs more than 9,000 people across the U.S., Canada and Puerto Rico. For more information, please visit www.henkel-northamerica.com.

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 2017, Henkel reported sales of 22.6 billion US dollars (20 billion euros) and adjusted operating profit of around 3.9 billion US dollars (3.5 billion euros). Combined sales of the respective top brands of the three business units – Loctite, Schwarzkopf and Persil – amounted to 7.2 billion US dollars (6.4 billion euros). Henkel employs more than 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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