Long service life when dispensing abrasive thermal pastes

Mastering the challenges of heat management

Thermal interface materials (TIM) are applied whenever heat has to be dissipated from a component. For example, they are used to fill gaps between two components - from the smallest components in electronics manufacturing to the production of electric vehicles. In addition to heat dissipation, some of the pastes also offer protection against mechanical influences or vibration.

### **Challenges in the dispensing of thermal conductive pastes**

When working with a highly viscous, abrasive paste application, the goal is: Achieve a stable, repeatable process with a long service life of the dispensing system. The biggest challenges here are:

* Avoiding air gaps

Air is a comparatively poorly conducting material. Therefore, cavities between small components in electronics manufacturing must be bonded without air, and gaps must be filled. preeflow enables the application of fluids and pastes without trapping any air.

* Processing highly viscous materials

The solution: To keep the dispensing pressure as low as possible - with regard to sedimentation too. This means achieving a process speed of 20 to 40 % of the maximum possible volume rate with the largest possible dispenser size.

* Dispensing materials with abrasive fillers   
  (constitution, distribution, sedimentation)

Fillers differ in their nature and form, and distribute differently in the carrier material. This makes them a particularly critical and unpredictable factor in the dispensing process. Due to the properties of the ViscoTec continuous piston principle and suitable dispensing components, preeflow microdispensers are ideally suited for handling highly filled materials.

The right dispensing components for thermal pastes

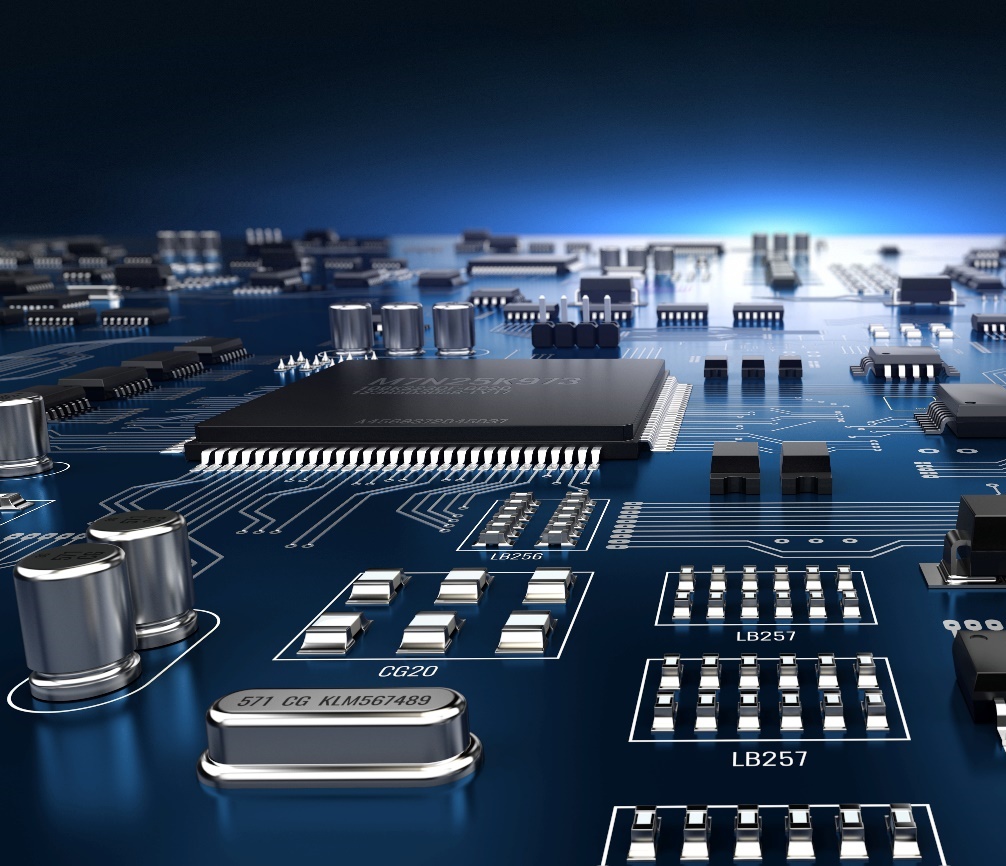
Depending on the dispensing quantity, different components must be selected. The following are available for selection: Diamond Coated (DC) rotors and VisLas stators. The DC rotors are produced in a combination of different coating and finishing processes specially developed for this purpose. This unique multilayer principle makes it possible to achieve a previously unattainable surface hardness for rotors made of metal. This significantly exceeds the surface hardness of standard rotors and also offers advantages in terms of friction between rotor and stator. The counterpart to the DC rotor is the already established VisLas stator, which is particularly suitable for abrasive materials.

preeflow offers flexible dispensing systems for a wide range of applications. Due to a modular design of the dispensers, individual components can be replaced at any time and adapted to the current dispensing process and all its requirements. With the right components, the service life of your dispensing systems is extended. By saving time, nerves, and money. Make the right choice!

You can find further information about this topic in the [ViscoTec Whitepaper "Heat management"](https://www.viscotec.de/en/news/whitepaper/heat-management-in-liquid-form-thermally-conductive-materials/).

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Pictures:



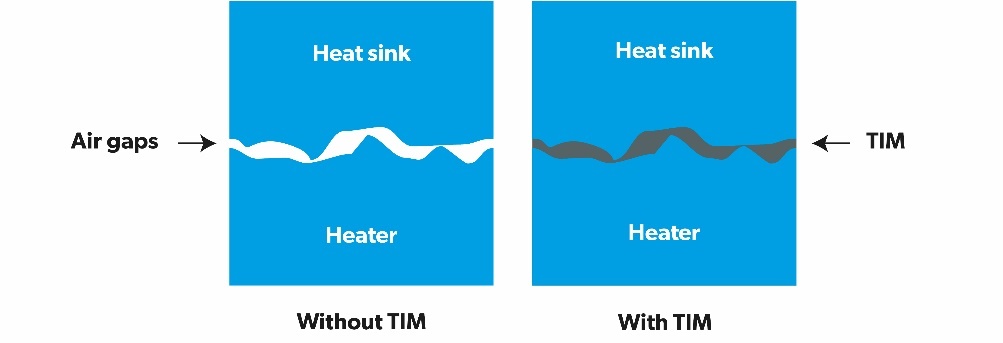
**Package substrate**

**TIM**

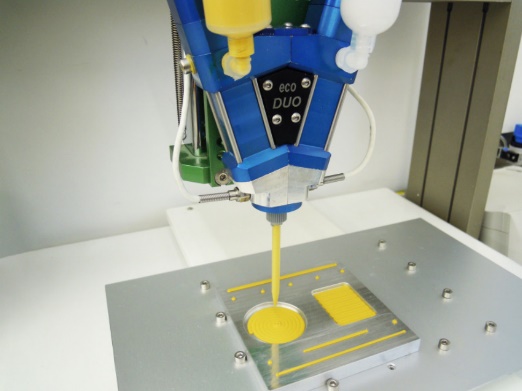
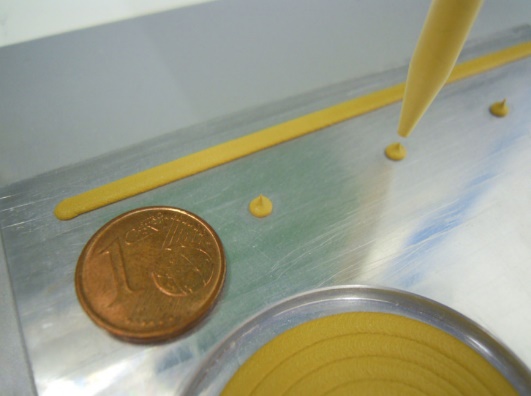
**Heat sink**

**Heater**

The structure of a printed circuit board



Comparison with and without thermal paste

Dispensing of abrasive thermal paste with the preeflow eco-DUO dispenser

Microdispensing in perfection!

Established in 2008, preeflow® ensures precise, purely volumetric dispensing of liquids in the smallest of quantities. preeflow® products are appreciated worldwide, not to mention because of their unique quality - Made in Germany. An international distribution network offers professional service and support in all areas of preeflow® dispensing systems. The various fields of application include, among others, automotive, electrical and electronics industry, medical technology, aerospace, renewable energies, electrical and hybrid technology and measurement and sensor technology. The complete preeflow® portfolio can be easily integrated due to standardized interfaces. Worldwide more than 50,000 preeflow® systems are working in semi or fully automated dispensing applications ­ to the user’s and customer's complete satisfaction. preeflow® is a brand name powered by ViscoTec Pumpen- u. Dosiertechnik GmbH. ViscoTec primarily deals in systems required for conveying, dispensing, applying, filling and emptying medium to high-viscosity fluids. The headquarters of the technological market leader is in Töging (upper Bavaria, near Munich). In addition, ViscoTec has subsidiaries in the USA, in China, Singapore, Indie and in France and employs about 270 people worldwide.

Press contact:

Thomas Diringer, Manager Business Unit Components & Devices

ViscoTec Pumpen- u. Dosiertechnik GmbH

Amperstraße 13, D-84513 Töging a. Inn

Phone +49 8631 9274-441

E-Mail: thomas.diringer@viscotec.de · www.preeflow.com

Melanie Hintereder, Marketing

ViscoTec Pumpen- u. Dosiertechnik GmbH

Amperstraße 13, D-84513 Töging a. Inn

Phone +49 8631 9274-404

E-mail: melanie.hintereder@viscotec.de · www.viscotec.de