

New Product: Microbond® SMT650

Maximized Reliability in Fine Feature Applications

Microbond® SMT650 high reliability solder paste achieves a consistently high surface insulation resistance that prevents electrochemical migration. Combining the new F650 flux system with the Innolot alloy delivers superior reliability—particularly in miniaturized systems in the automotive industry.

Electrochemical migration is a form of corrosion that negatively affects the reliability and service life of electronic components. It is caused by moisture—either during the circuit board manufacturing process or due to external factors. Miniaturization and the resulting minuscule distances between conductor paths lead to greater electric field intensity, which in turn increases the risk of electrochemical migration. One example are the control units in vehicles: Fluctuations in temperature can lead to condensation, and this can result in moisture reaching the circuit board. When combined with flux residue, this

moisture can lead to negative interactions such as the formation of dendrites and eventually lead to short circuits.

Microbond® SMT650 solder paste achieves a consistently high surface resistance that prevents electrochemical migration. In addition, the specially developed F650 flux system can be combined with different alloys. The combination of the F650 flux system with Innolot alloy delivers superior reliability— especially in miniaturized systems in the automotive industry. Its material composition provides a consistently high surface resistance that prevents electrochemical migration. Furthermore, Microbond® SMT650 is compatible with conformal coatings, solder resist, active and passive components, various PWB materials and combinations. For applications with low thermomechanical requirements Heraeus offers Microbond® SMT650 solder paste with a tin-silver-copper alloy (SAC).

Microbond® SMT650 Benefits

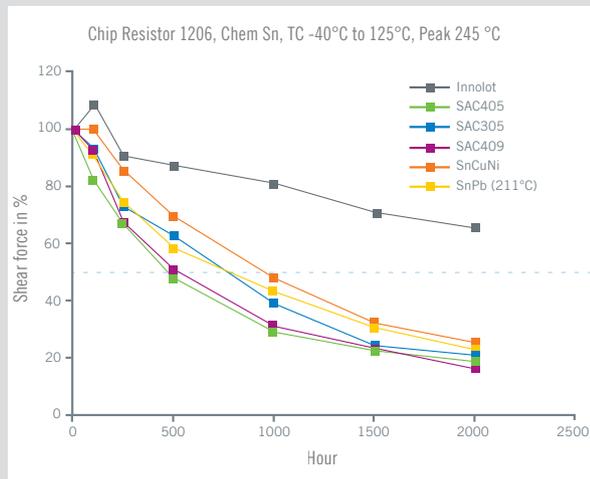
- Preventing electro-migration in fine feature applications - no dendrite growth and electro chemical migration is observed for various SIR test after 1500 h
- Excellent thermal mechanical strength, in combination with Innolot alloy
- Clear residue
- Excellent printing
- Efficient wetting
- Residue is compatible with wide range of conformal coating materials
- Type 4 powder for fine pitch applications



Product Properties and ID

Properties	F650 SA30C5-89M40	F650 IL-89M40
Alloy	SA30C5	Innolot
Metal Content	89%	
Viscosity	M	
Powder Type	4	
Halogen Content	Halogen Zero	
Powder Properties		
Particle size	20 - 38 µm	
Alloy	Sn96.5/Ag3/Cu0.5	Sn/Ag3.8/Cu0.7/ Ni0.15/Sb1.5/Bi3
Melting Point	217 °C	206 - 218 °C
Application		
Printing	Yes	

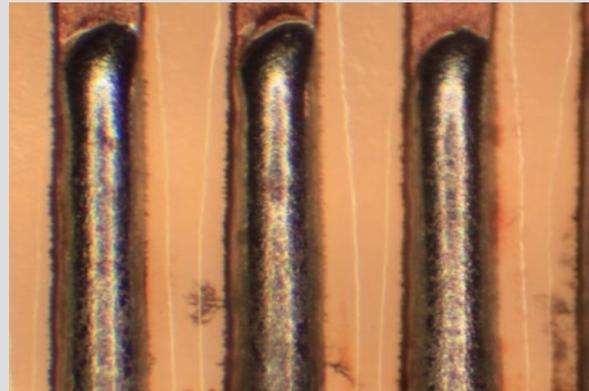
Alloy Reliability



Application Over Time - Long Hour Test in Humid Environment



No sign of electrochemical migration with SMT650



Electrochemical migration with flux which is not prepared for miniaturization

Heraeus Electronics
Heraeus Deutschland GmbH & Co. KG
Heraeusstraße 12-14
63450 Hanau, Germany
www.heraeus-electronics.com

Americas
Phone +1 610 825 6050
electronics.americas@heraeus.com

China
Phone +86 21 3357 5457
electronics.china@heraeus.com

Asia Pacific
Phone +65 6571 7677
electronics.apac@heraeus.com

Europe, Middle East and Africa
Phone +49 6181 35 3069
+49 6181 35 3627
electronics.emea@heraeus.com

The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for particular application. The Heraeus logo, Heraeus and Microbond® are trademarks or registered trademarks of Heraeus Holding GmbH or its affiliates. All rights reserved.