# Development of die-attach materials with high heat transfer and adhesion

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In recent years, the tendency of electronic devices to become smaller, more sophisticated, and larger in capacity has been expanded, and the need for high density and integration of semiconductor packages has been rapidly increasing. If the generated heat does not dissipate and remains inside the electronic modules, the temperature of the element rises and the efficient operation is hindered, resulting in a problem of reduced lifetime due to thermal stress. Thus, heat generated from semiconductors is an important issue, and the development of high reliability heat-sink-materials is more important than ever.
Therefore, in this study, we optimized the welding characteristics and densification of the silver powder mixing with synthesized silver complex to develop a die-attach paste with high heat dissipation and adhesion strength. As a result, sintering between silver particles was effectively carried out even at a low temperature of 230 ℃, and volume resistivity of sintered Ag paste was about 2.07 μΩ•cm. As a result of thermal conductivity measurement, it showed high heat-dissipation characteristics of 199.6 W/mK, and excellent adhesion characteristics of 2.90 kgf / mm$^2$.