Electrical properties of pre-alloyed Cu-P containing electrically conductive adhesive

Abstract

In this study, a pre-alloyed Cu-P powder with a trace amount of P (0.002at.%) was used as a metallic filler in a phenolic resin-based electrically conductive adhesive (ECA). The electrical property of the Cu-P-filled ECA was investigated for long-term stability and reliability by aging at high temperature exposure at 125°C and 85°C/85% RH for 1000h, respectively. Results showed that the electrical resistivity of the Cu-P-filled ECA could be maintained consistently low after high temperature exposure at 125°C for 1000h or aging at 85°C/85% RH for 1000h, compared with the rapidly increased resistivity of Cu-filled ECA over time. A significantly low final resistivity at an order of magnitude of 10-4cm could be maintained in Cu-P-filled ECA even after aging at 85°C/85% RH for 1000h.