

Characterization of Sn-3.5Ag-1.0Cu Lead-Free Solder Prepared via Powder Metallurgy Method

Abstract

The toxicity in the Sn-Pb solder has promoted the development of Pb-free solder in the electronics industries. Among the Pb-solders, the Sn-3.5Ag-1.0Cu solder is considered a potential replacement and being studied by many researchers. In the present study, the characteristics of Sn-3.5Ag-1.0Cu lead-free solder were studied. The raw materials were tin, silver and copper powders in micron size. The solder was prepared using powder metallurgy route which includes blending, compacting and sintering. Four blending times and two compacting pressures were used to investigate for optimum condition. The melting temperature of the samples were studied using differential scanning calorimeter (DSC) and the presence of Sn Ag, Cu were confirmed using x-ray diffraction analysis (XRD). Finally the effect of variables on the hardness of the solders is reported.