Ni 함유 복합 솔더 개발과 특성 평가
(Development and characteristics of Ni bearing solders)

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Abstract

Sn-Ag-Cu-Ni composite and monolithic solders were compared with Sn-Ag-Cu composite and monolithic solders. The effects of Cu/Ni ratio on $(Cu,Ni)_xSn_y$ reinforcing IMC (intermetallic compound) type were examined and Cu/Ni ratio ranges, in which $(Cu,Ni)_6Sn_5$ or $(Ni,Cu)_3Sn_4$ was stable could be determined. The effect of Cu/Ni ratio on interfacial IMC layer was also examined. The mechanism of $(Cu,Ni)_6Sn_5$ formation on Ni substrate and the possibility of $(Cu,Ni)_6Sn_5$ suppression by Ni addition was discussed. Ni addition enhanced the bonding properties and retarded the IMC growth. In Ni bearing composite solder, there was no significant sedimentation of reinforcing particle during reflow, which took place commonly in other composite solders. Wetability and mechanical properties of Ni bearing solders were also compared with Sn-Ag-Cu solder.