

White Paper

SnBi and SnPb

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Current literature suggests that the potential for the presence of Pb to influence Bi-containing Pb-free alloys exists at least down to 1.0 wt%Bi. Examples include

- Strength degradation immediately after soldering SnPb-plated components with Sn3.0Ag5.0Bi (see Figure 1)¹
- Significant degradation in plasticity and fatigue life for a 93.3Sn/3.1Ag/3.1Bi/0.5Cu solder joint contaminated with 0.5% Pb²
- Reduction in tensile strength after soldering Sn10Pb-plated components with Sn2.5Ag1Bi0.5Cu (see Figure 2)³

¹ Chip Scale Review, May/June 2001, Jeanne Hwang, The Effects of Pb Contamination on the Material Properties of Sn/Ag/Cu/Bi Solder

² Chung-Ang University, Young-Eui Shin

³ <http://www.smartgroup.org/nepcon2005/chrishunt.pdf>, Sony LF Component Reliability Data

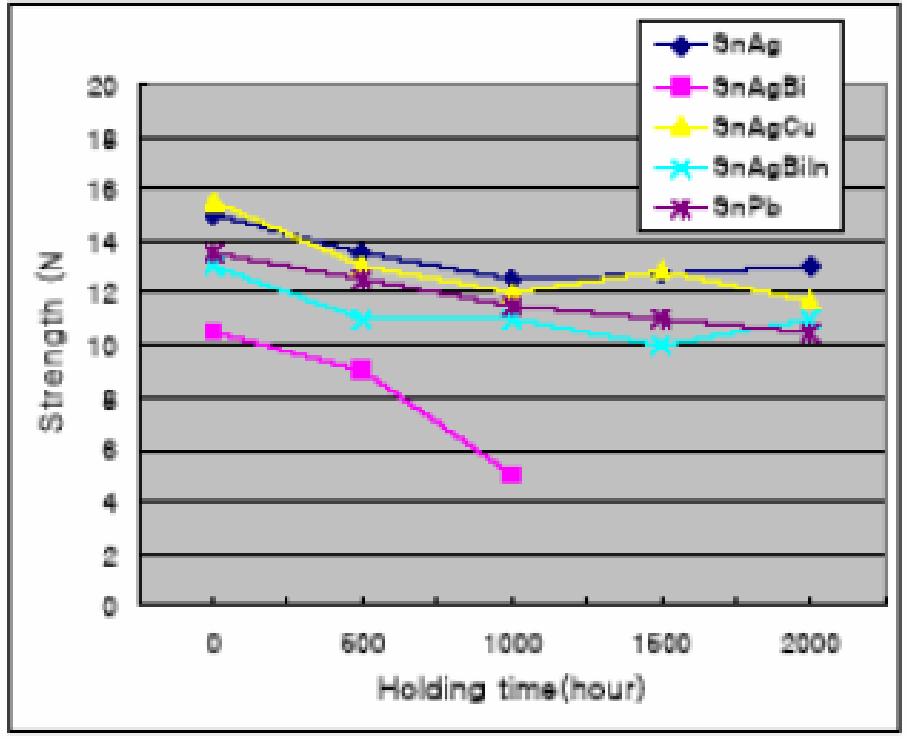


Figure 1: Change in fracture strength after aging as a function of solder and SnPb plating

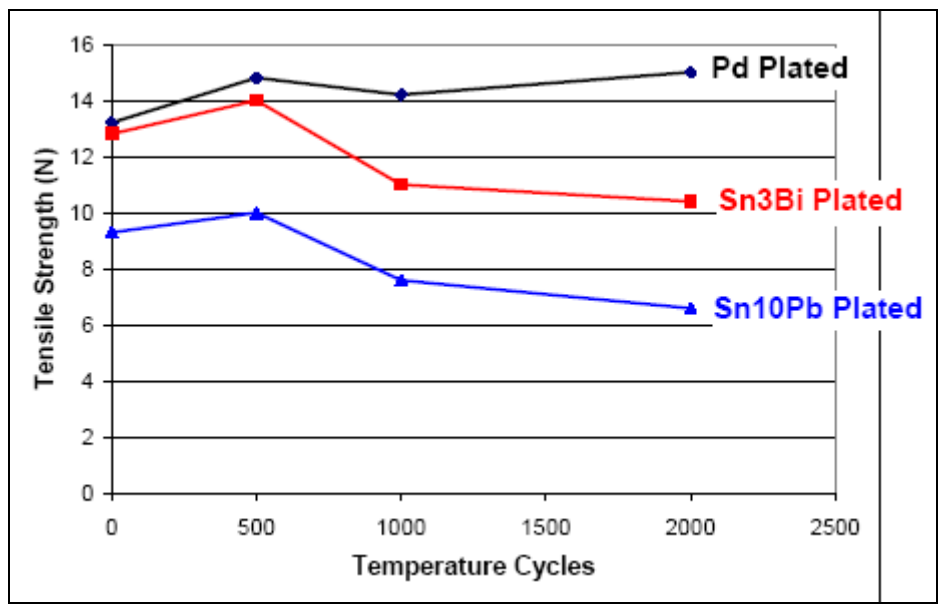


Figure 2: Tensile strength of quad flat pack (QFP) leads attached with Sn2.5Ag1Bi0.5Cu solder

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