

Effect of Immersion Coating Deposition Time on Solder Joint Properties

A.M. Zetty Akhtar, Hardinna Wirda Kahar, Siti Rabiattull Aisha Idris, Mahadzir Ishak

Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

ABSTRACT

Surface finishes on copper pads have been known to be one of influential factor in the solder joint quality. This due to the difference in interfacial reaction and intermetallic compound formation on solder pad was strongly influence by the type of surface finishes. Deposition times during immersion plating process on copper pads are important as the thickness of coating will decide several properties of surface finish, such as wettability during soldering process. Thus, this study aims to investigate the effect of deposition time of immersion gold coating on wettability of the surface finish and how it affect the formation of intermetallic compounds on solder joint. In this works, deposition time of copper pads in immersion gold solution were varied from 3 minutes up to 15 minutes. The thickness of immersion gold layer that form on Cu pads were then measured using Scanning Electron Microscopy (SEM). As the main objective of this study is to study the effect of deposition time during immersion plating process towards solder joint, the pads were reflowed along with Sn-3.0Ag-0.5Cu solder in furnace under temperature 250 °C for 25 minutes. Then, the cross sections of the solder joints were examined using optical microscope in order to measure the wetting angle and thickness of intermetallic compound formed; which acceptable value in industrial area, should be below 40° and below 4µm as reflow respectively.

KEYWORDS: Deposition Time, Intermetallic Compound Formation, Surface Finish, Wettability

DOI: [10.4028/www.scientific.net/AMR.1133.361](https://doi.org/10.4028/www.scientific.net/AMR.1133.361)