

# Deposition of Electroless Nickel Boron as Printed Circuit Board Surface Finish

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**Keywords:** Electroless nickel boron, surface morphology, surface hardness, surface roughness

**Abstract.** Electroless nickel boron (EN-B) had been appointed as a potential coating in several applications in industries like aeronautics, petrochemical industry, and firearms due to its desirable physical and mechanical properties such as high wear resistance, high hardness and provides uniformity in coating thickness. However, in semiconductor sector, the usage of nickel boron as coating layer is still insufficient due to lack of study in term of its potential as a coating on printed circuit board. This study aims to investigate the coating physical and mechanical properties of electroless nickel boron as potential printed circuit board coating layer. The study was conducted by a subject of copper substrate to surface pre-treatment before soaking in nickel boron plating bath solution that contained different concentration of sodium borohydrate, 0.4, 0.6, 0.8, 1.0 and 1.2 g/l. Surface roughness was evaluated using 3D Roughness Reconstruction software while the hardness test was conducted by using Vickers Hardness Test MMT-X7 Matsuzawa. The surface structure was evaluated using ProgRes C3 IM7200 Optical Microscope and Field Emission Scanning Electron Microscopy (FESEM). It was found that the surface roughness and hardness resistance were affected by sodium borohydrate which correlated with the surface microstructure.