Solderability of Lead-free finish after storage

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ABSTRACT

Testing was performed on lead-free FCI Bergstik® pins to verify solderability after 26 months storage in normal conditions.
All samples successfully passed the 'Dip and Look' solderability test.

INTRODUCTION

FCI selected matte pure Tin over Nickel to replace the traditional Tin-lead finish. Although pure Tin finishes have been used for many years for soldering applications, the Dip and Look test was performed to verify solderability after extended storage time.

EXPERIMENTAL WORK

The test samples consisted of FCI Bergstik® SMT pins, PN 77310-116 plated with 1.3µm Nickel barrier followed by Tin over-plate layer (either 2.0 µm or 4.0 µm thickness).
Samples, as-plated, were stored for 26 months at room temperature (23 +/- 5°C); ten (10) pins were tested for each version (2.0µm and 4.0µm Tin).

Test method: Dip and look test (IEC 60512-6, test 12a)
Solder bath: Sn60Pb40
Temperature: 235°C
Immersion time: 5 seconds
Flux: non-activated flux (75% isopropanol – 25% cellophane)

RESULTS

All pins exhibited 100% solder coverage on four sides.

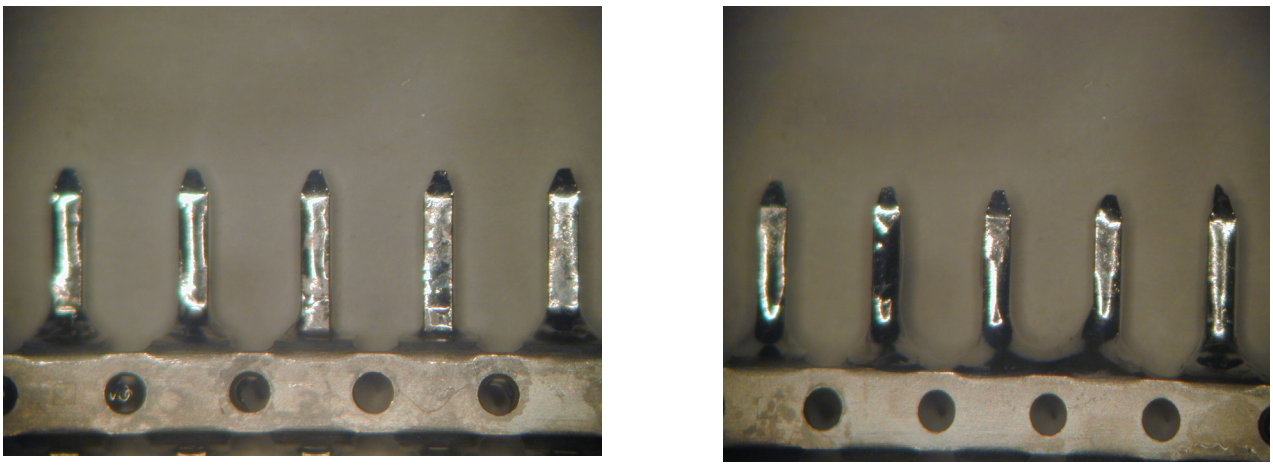

Figure 1 - Solder coverage on carrier side (4.0 µm Tin)

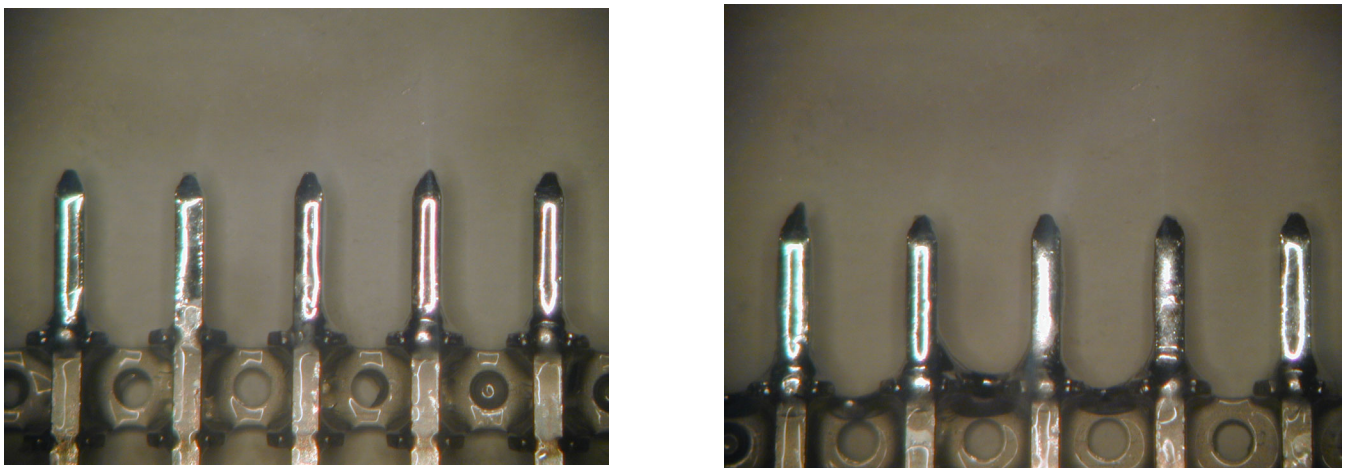

Figure 2 - Solder coverage on opposite carrier side (4.0µm Tin)