

Amendment 1 to IPC-4554

(Replaces all of section 3.5 in IPC-4554 Original Release)

3.5 Solderability This thickness specification contained herein shall meet the coating durability requirements of Category 3 in IPC/EIA J-STD-003, i.e., intended for boards likely to experience long storage (e.g. greater than six months). Caution needs to be exercised pertaining to the storage and packing of the ISn boards to ensure that the growth of copper-tin IMC's and surface oxides are minimized and will thus meet the Category 3 requirements. Exposure to high storage temperatures will accelerate the formation rate of copper tin intermetallics. Storage in a high humidity environment with the PCBs removed from their original packaging may increase the oxide thickness and/or species and likewise have a detrimental effect on solderability. Recommended storage conditions should not exceed 25°C [77.0 °F] and a humidity range of 30 to 70% R.H. Such storage conditions are stated in J-STD-003 as providing a one year coating durability for Class 3 applications.

- Solderability testing using Eutectic SnPb solder **shall** use the Standard Test Flux # 1 as per the IPC/EIA J-STD-003 for four Tests: A, B, C and D with exceptions noted for Tests E and F, below.
 - 1) Test A – Edge Dip Test.
 - 2) Test B – Rotary Dip Test.
 - 3) Test C – Solder Float Test
 - 4) Test D – Wave Solder Test (This Test D may also use a production flux, AABUS.)
 - 5) Test E – Surface Mount Simulation Test will need to use a flux AABUS, because the Standard Test Flux # 1 is not available in a solder paste form.
 - 6) Test F – Wetting Balance Test **shall** only use the Standard Test Flux # 2.
- Solderability testing using Lead Free SAC305 solder **shall** use the Standard Test Flux # 2 as per the IPC/EIA J-STD-003 for five Tests: A1, B1, C1, D1 and F1 with exception noted for Test E1, below.
 - 1) Test A1 – Edge Dip Test.
 - 2) Test B1 – Rotary Dip Test.
 - 3) Test C1 – Solder Float Test
 - 4) Test D1 – Wave Solder Test (This Test D1 may also use a production flux, AABUS.)
 - 5) Test E1 – Surface Mount Simulation Test will need to use a flux AABUS, because the Standard Test Flux # 2 is not available in a solder paste form.
 - 6) Test F1 – Wetting Balance Test

Note #1: The use of steam conditioning is not an applicable accelerated stress method for ISn. The use of 72°C [162 °F] / 85% R.H. for eight hours is the recommended stress condition for this deposit. (See Figure 3-4 for surface mount solderability test coupon.)

Note #2: Baking of boards to remove moisture following the recommendations of IPC-1601 **shall** require the use of the Standard Test Flux # 2 when testing with Eutectic SnPb solder where the default flux had previously been Standard Test Flux # 1.