The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.4.23	
Subject	
Soldering Resistance of Laminate Materials	
Date	Revision
3/79	
Originating Task Group	
N/A	

1 Scope This test method is used to determine the resistance of laminate materials (both unclad and etched surfaces) to the thermal abuse of a solder dip. Resistance to softening, loss of surface resin, scorching, delamination, blistering and measling are considered in the evaluation.

2 Applicable Documents

IPC-TM-650 Test Methods Manual

2.4.1 Adhesion, Tape Testing

2.4.12 Solderability, Edge Dip Method

MIL-F-14256 Flux

3 Test Specimen Each specimen must be 3.18 cm x 3.18 cm thickness. A separate specimen is required for the unclad, etched, fluxed, and unfluxed tests. Three samples are required from each sheet.

4 Equipment/Apparatus

4.1 An electrically heated, thermostatically controlled pot of sufficient size to accommodate the specimen and containing no less than 2.25 kg of Sn6O or Sn63

4.2 A device, as shown in Figure 1, or some other similar device may be used, if:

- The rate of immersion, dwell time, and withdrawal are within the test limits described in the procedure
- The specimen and solder surface remain perpendicular within 5°
- Wobble, vibrations, and other extraneous movements are eliminated

4.3 Warnow 2-710 black acid resisting ink, or equivalent

4.4 NAZ-DAR ER-111 black epoxy ink, or equivalent

4.5 A convection drying oven capable of attaining at least 149°C

5 Procedure

5.1 Etched and Unetched Specimen

5.1.1 Expose:

- One specimen having a surface upon which no metal cladding was ever applied
- One specimen on which the metal cladding has been removed by standard etching processes
- One specimen with metal cladding remaining to the Solderability Edge Dip Method in IPC-TM-650, Method 2.4.12

5.1.2 Examine the specimens for evidence of discoloration or surface contaminants, loss of surface resin, softness, delamination, interlaminar blistering, or measles. The specimen having metal cladding must also be examined for blistering or delamination of the metal foil from the laminate material.

5.2 Plastic Surface Tape Test

5.2.1 Screen print one of the test inks to the surfaces of an unclad specimen and an etched specimen.

5.2.2 Treat test inks as follows:

1. Warnow 2-710: Cure for a minimum of 30 minutes in air or oven. The dry film must be hard and dull in finish.
2. NAZ-DAR ER-111: Cure for a minimum of 8 minutes at 135°C. The cured ink must have a hard glossy finish.

5.2.3 After the specimens have cured properly, perform the plating adhesion test on the inked surfaces, as defined in IPC-TM-650, Method 2.4.1. Use type I class A tape.

5.2.4 Carefully examine specimens for the items discussed in 5.1.2.

5.2.5 Examine for evidence of mold release agents, indicated by particles of ink adhering to the tape, or by the absence of ink from the laminate surface, or both.

5.3 Fluxed and Unfluxed Specimens

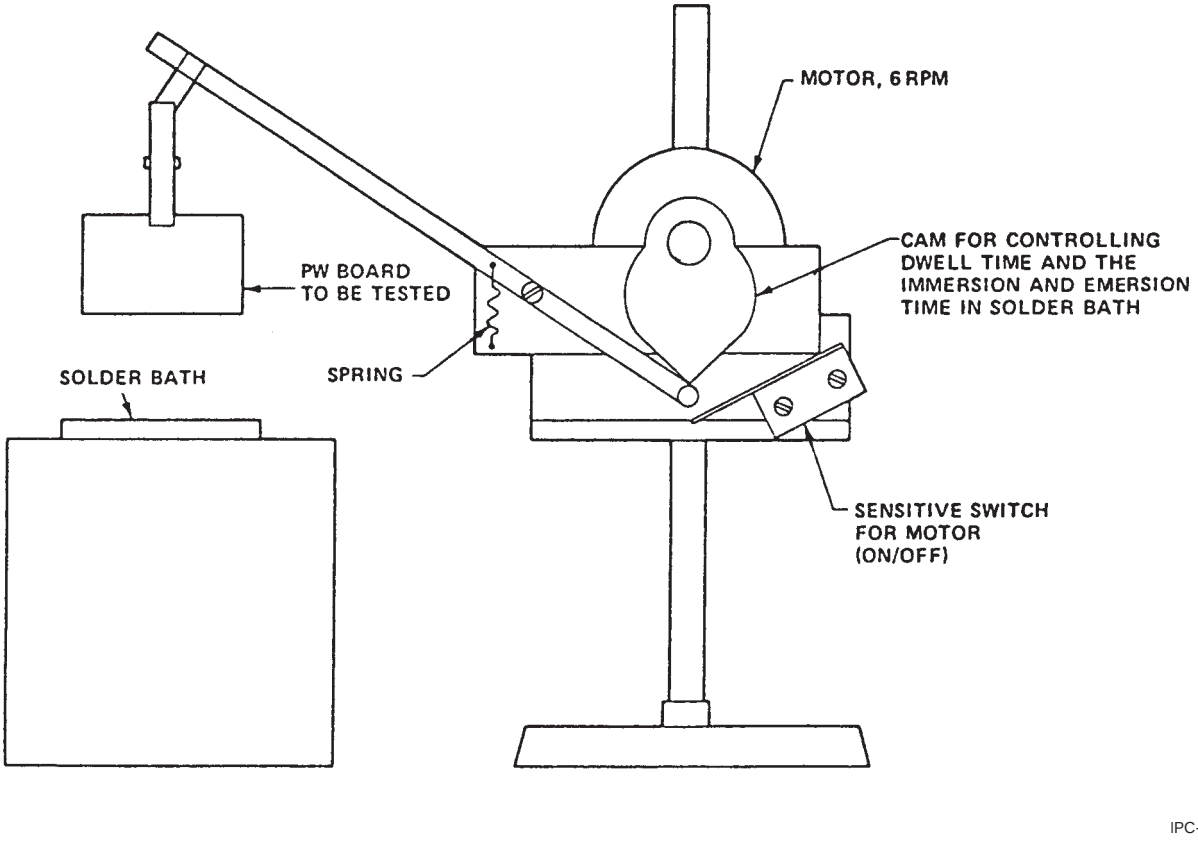

Figure 1 Suggested Dipping Device

5.3.1 Clean the metal clad specimen by light abrasion or other suitable method, then flux the metal surface with a rosin flux conforming to MIL-F-14256.

5.3.2 Clean the unclad specimens by standard production techniques, then flux the laminate material with a rosin flux conforming to MIL-F-14256.

5.3.3 Carefully examine all specimens, then perform the tests described in 5.1.1 through 5.2.5.