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

Number	
2.4.12	
Subject	
Solderability, Edge Dip Method	
Date	Revision
6/91	**A**
Originating Task Group	
N/A	

1.0 Scope This method is used to determine the solderability of copper foil, copper clad laminate, and printed boards. This method does not specifically relate to the solderability of the internal plating in holes.

2.0 Applicable Documents None

3.0 Test Specimen

Boards Specimen can be a scrap edge, a finished product or a specially prepared specimen processed with a group of production boards, as mutually determined between vendor and user.

Copper Foil A representative sample of copper foil that is 25 mm [1 in] wide and of sufficient length to dip approximately 50 mm [2 in] into the solder.

4.0 Apparatus

4.1 Solder Pot An electrically heated thermostatically controlled pot of sufficient size to accommodate the specimen containing no less than five pounds of solder.

4.2 Dipping Device A device as shown in Figure 1 shall be used. A similar device may be used if:

1. the rate of immersion, dwell time and rate by withdrawal are within the test limits described in the procedures;
2. the board and solder remain perpendicular within five degrees and
3. wobble, vibration and other extraneous movements, are eliminated.

4.3 Flux Nonactivated rosin flux having a nominal composition of 25% by weight of water white gum rosin in a solvent of isopropyl alcohol 99%. The specific gravity of the flux shall be 0.843 ± 0.005 at 25°C (77°F), and free of additional activators.

4.4 10% HCL by volume

5.0 Procedure

5.1 Preparation

5.1.1 The specimen shall be checked in an ''as received'' condition from the vendor and care must be exercised to prevent contamination (by grease, perspirants, etc.) of the surface to be tested.

5.1.2 Preclean the specimen using a 15 second immersion in 10% HCL (by volume) followed by water rinsing. The HCL shall be maintained at 60 ± 5°C [140 ± 10°F]. Dry the specimen quickly to avoid excess oxidation of the sample. Use of an air blower or isopropyl alcohol to expedite the drying is permitted.

5.1.3 Dip the specimen into the described flux and allow to drain for 60 seconds before proceeding with the solder dip.

5.2 Test

5.2.1 Stir, and skim the surface of the molten solder with a clean stainless steel paddle to assure that the solder is of a uniform composition and a temperature of 245 ± 5°C (473 ± 9°F).

5.2.2 Immerse the specimen edgewise into the molten solder. The insertion and withdrawal rates shall be 1 ± 0.025 inches per second, with a dwell time of 4 seconds ± 0.5 seconds.

5.2.3 Upon withdrawal, the solder shall be allowed to solidify by air cooling while the specimen is in the vertical position.

5.2.4 Thoroughly remove the flux and examine.

5.3 Evaluation

5.3.1 Examine specimen for a new uniform adhering coating of solder.

5.3.2 An area of 3.2mm [0.125 in] width, approximately, from the edge of the specimen shall not be evaluated.

6.0 *Notes*

6.1 As an aid to evaluation of the test results, see Figure 2. This aid to be used primarily to illustrate types of defects rather than percentage of area covered.

6.2 No quenching or other means of accelerating cooling shall be used.

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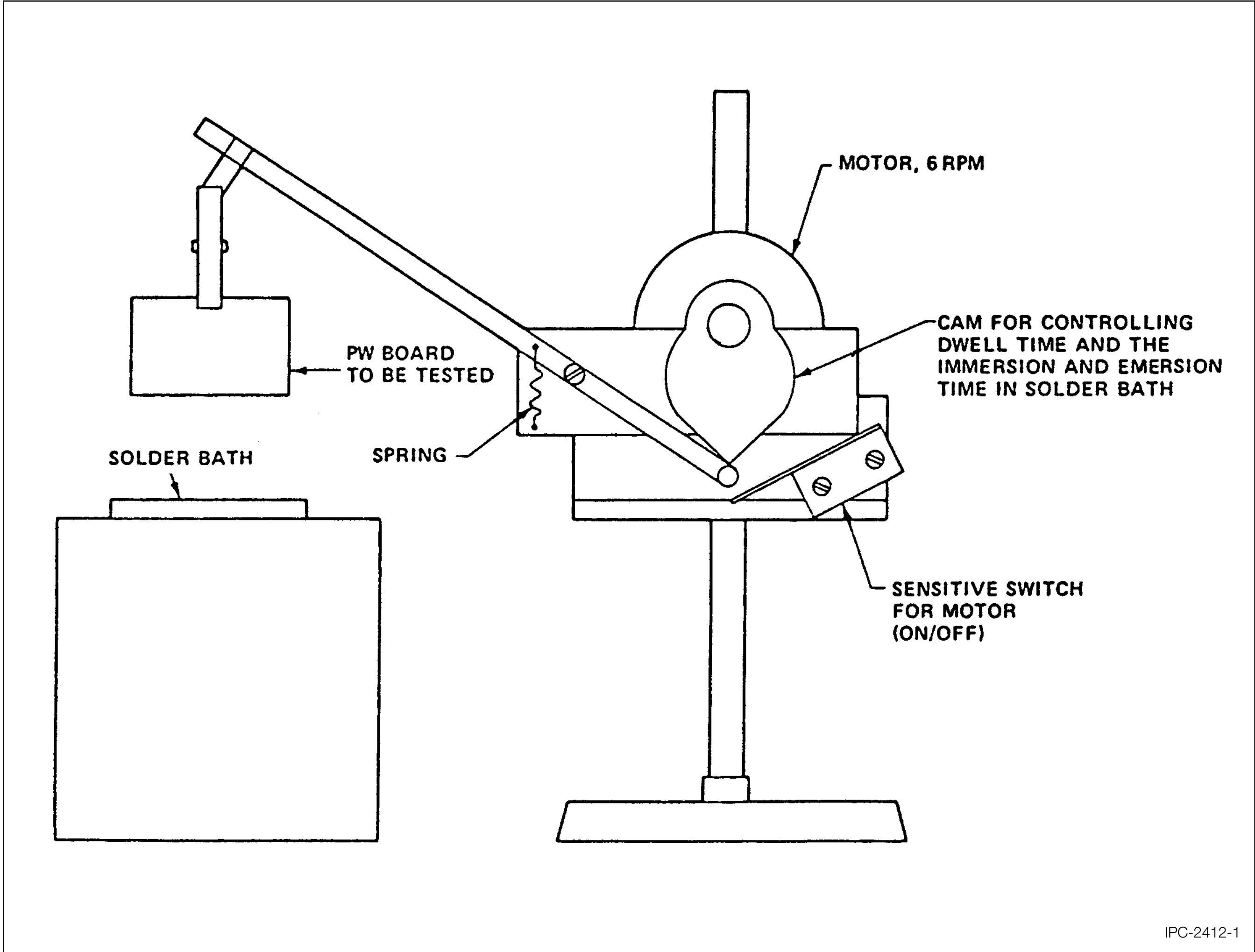
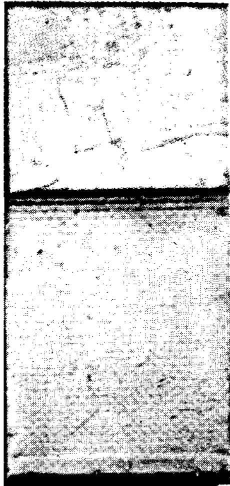
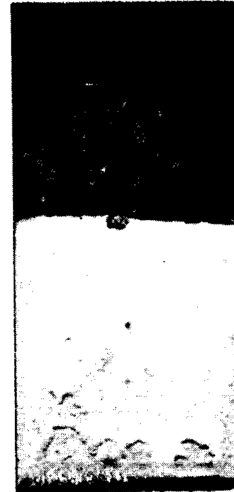


Figure 1 Suggested Dipping Device

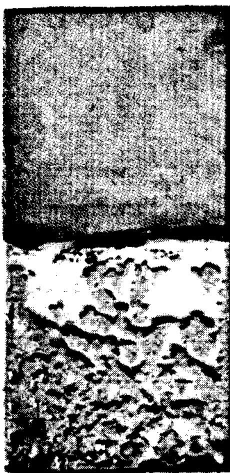
Preferred Wetting



Small Amount of Dewetting



Complete Dewetting



Nonwetting

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Figure 2 Aid to Evaluation