



# IPC-TM-650 TEST METHODS MANUAL

**1 Scope** This test method establishes and defines the procedures for determining the solder float resistance of copper foil clad and bare flexible dielectric material.

## 2 Applicable Documents

**J-STD-004** Requirements for Soldering Fluxes

## 3 Test Specimen

**3.1** Two specimens, approximately 50 mm x 50 mm per clad side.

**3.2** For double clad laminate, a separate specimen unit shall be prepared and tested for each side. The copper foil shall be etched from the reverse or nontest side of each specimen using standard commercial practices. Bare dielectric material shall be tested bare.

## 4 Apparatus

**4.1 Test Chamber** A circulating air chamber capable of maintaining a uniform temperature of  $135^{\circ}\text{C} \pm 10^{\circ}\text{C}$ .

**4.2 Solder Pot** An electrically-heated, thermostatically-controlled solder pot of adequate dimensions to accommodate the specimen and containing no less than 2.25 Kg of solder.

**4.3** Cutter template and cutter to prepare approximately 50 mm x 50 mm specimens of copper clad dielectric material.

**4.4** Solder float test fixture as per Figure 1.

**4.5** Sn60, Sn62, or Sn63 solder conforming to J-STD-004.

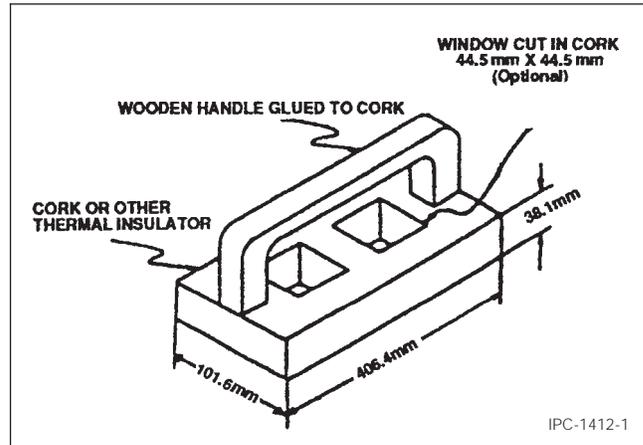
## 5 Procedure

**5.1** Prepare two specimens, clean the copper foil, then precondition the test specimen in an air circulating oven maintained at  $135^{\circ}\text{C} \pm 10^{\circ}\text{C}$  for one hour. Specimens may then be held in a room temperature desiccator.

**5.2** Remove the specimens from the conditioning chamber.

**5.3** Attach the specimens to the solder float test fixture with

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**Figure 1 Solder float test fixture**

a thumb tack or other low mass holding device (Figure 1) prior to floating the sample. Float the specimen, foil side down, on the surface of the molten solder, maintained at the temperature specified in Table 1, for 10 seconds.

**Table 1 Solder Float Temperatures**

Method A	$260^{\circ}\text{C} \pm 5^{\circ}\text{C}$
Method B	$288^{\circ}\text{C} \pm 5^{\circ}\text{C}$

**5.4** Float the specimen on the surface, then remove the specimens and tap the edges to remove excess solder.

**5.5 Evaluation** Thoroughly clean each specimen and visually examine for blistering, delamination or wrinkling. For bare dielectric films, examine for blistering, shrinkage, distortion or melting.

## 6 Notes

**6.1** For materials that absorb moisture, the preconditioning in this method is required to remove absorbed moisture from the materials. Absorbed moisture can volatilize and cause delamination and blistering because of the rapid temperature rise experienced in the solder bath. Drying may not be required for materials with low moisture absorption characteristics.