

ADOPTION NOTICE

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IPC-TM-650 TEST METHODS MANUAL

1 Scope This procedure is an alternate method for preparing multiple metallographic specimen(s) using microsection equipment. The specimen(s) is(are) for evaluation for quality of the laminate system, plated-through holes (PTHs), the copper foils, platings, and/or coatings. The same basic procedure may be used for examination of other areas on the product.

Note: This microsection technique is a process and not a test method.

Note: SAFETY The use of the materials listed in Section 4 may be limited or forbidden in some environments. Please review the Material Safety Data Sheet (MSDS) for the materials being used.

2 Applicable Documents

IPC-MS-810 Guidelines for Semi-Automatic Microsection

IPC-6012 Qualification and Performance Specification for Rigid Printed Boards

3 Test Specimens Remove the required specimen(s) from the product to be tested. Allow sufficient clearance to prevent damage to the area and PTHs to be examined. The recommended clearance from the pad edge to the cut surface is 2.54 mm [0.100 in]. Abrasive cut-off wheels can cut closer to the sample without damaging the area to be examined.

4 Apparatus

4.1 Sample removal method (see IPC-MS-810 for best method).

4.2 Sample alignment tools.

4.3 Mount molds.

4.4 Mounting surface.

4.5 Vacuum/pressure system (optional).

4.6 Release agent (optional).

4.7 Potting material (recommended maximum cure temperature is 93 °C [200 °F]).

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Subject Microsection—Semi or Automatic Technique Microsection Equipment (Alternate)	
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4.8 Explosion proof fume hood for mounting material.

4.9 Microsection equipment (see IPC-MS-810 for purchasing guidelines).

4.10 Metricated abrasive paper P100–P1200 (American grit range: 100–600).

4.11 Polishing cloths.

4.12 Diamond abrasive (1.0 µm - 9.0 µm [39.4 µin - 354 µin]) or oxide abrasive (3.0 µm - 0.1 µm [118 µm - 3.94 µin]).

4.13 Polishing lubricant.

4.14 Micro-etch solution.

4.15 Micro-etch applicator (optional).

4.16 Engraver (optional).

5 Procedure and Evaluation

5.1 Procedure

5.1.1 The semi or automatic microsection technique is a process and not a test method. Microsectioning needs to be viewed as a process with quality criteria as each major step is completed. This procedure specifies the quality criteria that must be met to make microsections that can consistently find the defects (or anomalies) of concern. The customer should not specify the process steps and materials but the quality criteria for surface preparation of the specimen.

5.1.2 Preparation of Specimen(s) Remove the specimen from the PCB or panel such that the tooling pin holes or target PTHs are not damaged. Complete any thermal testing required by the customer.

5.1.3 Inspect Tooling Pin System Inspect the tooling pin holes or slots to verify they are not plugged or damaged. Clear plugged tooling pin holes with a tool that will not change its dimensional location or enlarge the hole. A drill bit of the same hole diameter is recommended.

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