



# IPC-TM-650 TEST METHODS MANUAL

## 1.0 SCOPE

**1.1** This procedure describes three methods to determine the level of treatment transfer for treated copper foil.

## 2.0 APPLICABLE DOCUMENTS

**ANSI/IPC-MF-150** "Metal Foil for Printed Wiring Applications," October 1991, current revision.

**ANSI/IPC-CF-152** "Composite Foil Specification," current revision

## 3.0 DEFINITION

**3.1 Treatment** An electro-mechanical or chemical process applied to one or both sides of copper foil to enhance the adhesion of the foil to the base laminate.

**3.2 Treatment Transfer** Any visible bond enhancement that has transferred from the surface of the copper foil to the laminate substrate.

## 4.0 EQUIPMENT

**4.1** For the Tape Transfer method a sample of the foil to tested 152 mm x 152 mm.

**4.1.1** 3M Scotch Brand #600 Tape 19 mm wide.

**4.2** For the Strip Transfer method a representative sample of foil, pressed to four plies of 7628 FR-4 prepreg to produce a 0.028 ml laminate, or as agreed upon by user and supplier.

**4.2.1** Etching system capable of removing copper foil from base laminate.

**4.3** For the Weight and Filter Paper method a sample of treated foil at least 203 mm x 51 mm.

**4.3.1** #2 Filter Paper strips at least 76 mm x 25 mm.

**4.3.2** A standardized weight of 250 grams with a 3/4 inch surface

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Originating Task Group <b>Treatment Transfer</b>	

## 4.4 Visual Acceptance Standards

## 4.5 White Background

## 5.0 TEST PROCEDURE

### 5.1 Tape Transfer Method

**5.1.1** Each copper sample being tested will have tape 19 mm x 102 mm applied to the treatment side in the machine direction of the foil. The tape should be firmly applied by hand.

**5.1.2** Remove the tape by quickly pulling on one end at an acute angle.

**5.1.3** The tape should then be reattached, adhesive side down on standard white paper.

### 5.2 Strip Transfer Method.

**5.2.1** Image a line on the laminate to a minimum of 1/8 inch wide.

**5.2.2** Etch, clean and process using standard industry practices and equipment. If preferred, a cut or sheared sample may be used.

**5.2.3** Pull the strip of foil back 1 inch to expose the area directly under the foil.

**5.2.4** Visually examine this area by placing the laminate strip against a white background and comparing the amount of transfer with the standard.

### 5.3 Weight and Filter and Paper Method

**5.3.1** Place the copper foil sample on a firm, flat surface with the treatment side up.

**5.3.2** Place the #2 filter paper on the copper foil sample with the rougher side of the paper against the foil.

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**5.3.3** Place the proper surface of the weight on the filter paper.

**5.3.4** Grasping one end of the filter paper, pull the paper and the weight across the surface of the foil (going in the transverse direction, across the grain) for a distance of 6".

## **6.0 EVALUATION**

**6.1** The specimen is evaluated for treatment transfer as follows:

1. No transfer
2. Very slight transfer
3. Slight transfer
4. Transfer

**6.2** The grading scheme listed above will be based on visual comparison of an acceptance standard agreed upon by user and supplier.