

IPC-TM-650 TEST METHODS MANUAL

1 Scope This test method is for use in determining if organic, nonionic contaminants are present on bare printed wiring board, and completed assembly surfaces in the production area by limited technical personnel. Although the test fluid is also capable of dissolving very small amounts of various inorganic compounds, their presence would generally be masked by the much higher levels of the organic contaminants.

1.2 The test will neither identify the contaminants present nor separate contaminant mixtures into the individual constituents (see Test Method 2.3.39). The present visual limit of organic contaminant detection by this method is approximately 10 micrograms/cm².

2 Applicable Documents

IPC-TP-383 Organic Surface Contamination\MLts Identification, Characterization, Removal, Effects on Insulation Resistance and Conformal Coating Adhesion.

IPC-TM-650 Test Methods Manual

2.3.39 Surface Organic Contamination Identification Test (Laboratory Analytical Method.)

3 Test Specimens A bare printed wiring board or test coupon with a surface area of at least 35 cm².

4 Apparatus or Material

4.1 The test fluid; Spectro or High Pressure Liquid Chromatography (HPLC) grade acetonitrile. Other appropriate solvents may be used as agreed upon by user and vendor.

4.2 Microscope slides, 25 mm x 75 mm [0.984 in x 2.952 in], glass.

4.3 Disposable glass medicine dropper with rubber squeeze bulb.

4.4 60 ml (2 oz.) capacity rubber squeeze bulb fitted with glass medicine dropper tube.

4.5 Lint free gloves.

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Originating Task Group Rigid Printed Board Performance Task Group (D-33a)	

5 Procedure

5.1 Preparation

5.1.1 Preclean microscope slide by rinsing the slide with test fluid, drying it as described in 5.2, and establishing that it is free from residues as described in 5.4.

5.1.2 Hold the test specimen by the edges at an angle above the precleaned microscope slide. The specimen should not touch the slide.

5.2 Test

5.2.1 Slowly drip 0.25 ml to 0.50 ml of test fluid onto the test specimen, allowing it to wash across a small area of the surface of the specimen and drip onto the microscope slide. Do not allow medicine dropper to touch test specimen (see Figure 1).

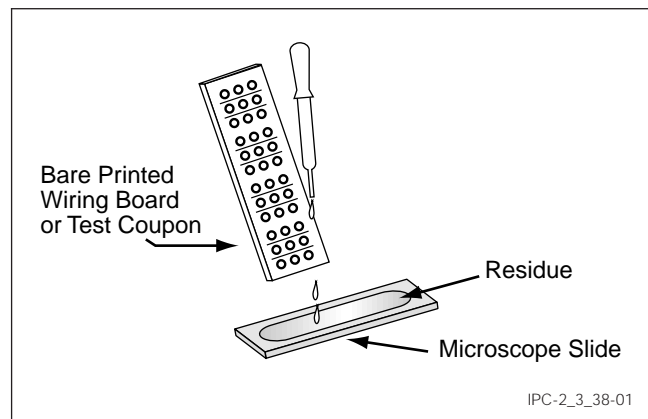


Figure 1 Contaminant Collection on Microscope Slide

5.2.2 Evaporate the test fluid with a gentle stream of dry, oil-free air or nitrogen in a well-ventilated fume hood. If the compressed air or nitrogen specified above is not available, a gentle air stream may be generated using a large rubber squeeze bulb and glass tube.

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5.2.3 Rapid evaporation of the test fluid must be avoided, to prevent evaporative cooling of the glass slide and subsequent moisture condensation from the air onto the slide.

5.2.4 Application of sufficient heat to evaporate the water may volatilize part or all of the residue and invalidate the results.

5.2.5 Repeat until 3 ml \pm 0.5 ml of test fluid washings per 10 cm² of washed specimen surface area have been accumulated on the slide.

5.3 Control Slide

5.3.1 Dispense the same quantity of test fluid onto a duplicate precleaned microscope slide and allow to evaporate.

5.3.2 Examine the slide as described in 5.4. No residue should be seen.

5.3.3 If residues are seen, the test fluid is not pure enough to use in this test.

5.3.4 A faint outline of the test fluid may be seen on the slide. This does not necessarily indicate the presence of contamination.

5.4 Evaluation

5.4.1 Hold the test slide on the edges and tilt so over-head incident light is reflected from the surface. The residues (if present) washed from the test specimen will be readily visible.

6 Notes

6.1 Test fluid from Fisher Scientific Co. (FSC19C). High Pressure Liquid Chromatography (HPLC) grade acetonitrile was used to develop this test method. Equivalent material from other suppliers may be used, provided no residue remains after evaporation as described in this test method. (Residue after evaporation is less than one part per million.)

6.2 The American Conference of Governmental and Industrial Hygienists has adopted a 40 ppm (v/v) Threshold Limit Value (TLV) for acetonitrile. It is recommended that the application and evaporation of test fluid be carried out in a well-ventilated fume hood. Rubber gloves and safety glasses should be provided for the person(s) running the test.

6.3 Fisher Scientific Co. plain glass microscope slides, catalog number 12549, were used to develop this test. Equivalent slides may be used for testing.

6.4 Fisher Scientific Co. straight medicine droppers, catalog number 13700, were used to develop this test. Equivalent droppers or disposable pipettes may be used.

6.5 Fisher Scientific Co. 60 ml (2 oz.) capacity rubber squeeze bulbs, catalog number 14070D (or equivalent), are suitable for this use when fitted with a straight glass medicine dropper.

6.6 The actual identification of the contaminant(s) may be accomplished using IPC Test Method 2.3.39. If identification is to be performed, the specimen can be transferred to an Infrared Analysis plate (see 5.3.1 of IPC Test Method 2.3.39).