



# IPC-TM-650 TEST METHODS MANUAL

**1.0 Scope** This test method covers the cure, or permanence, testing of thermally cured solder mask (solder resist) organic coatings. Solder masking is the application of either a liquid film or dry film coating on all types of laminates and circuits. The coating is applied where no solder is to appear and, conversely, is omitted where soldering is intended.

**2.0 Applicable Documents** None

**3.0 Test Specimens** IPC Test Board IPC-B-25 preproduction board, or a sample production board with the solder mask coating applied and cured as recommended by the manufacturer.

## 4.0 Apparatus

**4.1** Reagent grade methylene chloride

**4.2** Methyl Chloroform

**4.3** Petrie dishes

**4.4** Lint free cloths

**4.5** Stop watch

**4.6** Cotton Swab (Q-tips, or equivalent brands having a wooden blunt end).

**4.7** Rubber Gloves

## 5.0 Procedure

**5.1 Preparation** Prepare specimens as described by the manufacturer or as described below. Apply the solder mask to the clean test specimen surface and cure per the vendor's recommendation. When a batch type chamber is used, it is essential to have a good exhaust to remove the evaporating solvent vapors. After curing, clean the surface, rinse, dry, and seal with manufacturer's recommended sealant.

Number <b>2.3.23</b>	
Subject <b>Cure (Permanency) Thermally Cured Solder Masks</b>	
Date <b>2/88</b>	Revision <b>B</b>
Originating Task Group <b>N/A</b>	

## 6.0 Test

**6.1** Place several drops of room temperature methylene chloride or methyl chloroform on separate locations on the surface of the solder mask (see 6.1.3).

**6.2** Immediately attempt to wipe off the solder mask using a lint free cloth. Repeat if evaporation is too rapid to achieve meaningful results.

**6.3** Scratch the surface with the blunt wooden end of a cotton swab to determine permanence.

**6.4** If no attack is observed, the solder mask has sufficient permanency.

## 7.0 Notes

**7.1** These test methods do not adequately predict the ability of the solder mask to withstand hot solvent vapors, such as degreasers. Any chemicals used in the production of circuit boards may be applied as described in paragraph 4.1 and the samples evaluated.

**7.1.1** The insulation resistance of the solder mask is critical, since it becomes a permanent part of the wiring board. Performance of an occasional electrical resistance test is also recommended because this result is dependent on the degree of cure. The more complete the cure, the higher the resistance.

**7.1.2 Caution:** Methylene chloride (dichloromethane) is a halogenated solvent. It is irritating to the eyes and skin. Because of its low boiling point, high concentrations can be reached in a short time as the liquid evaporates quickly. High concentrations of vapor can cause dizziness or drowsiness.

**7.1.3** Methylene chloride is a more aggressive solvent, however, due to health concerns currently being considered, other chemical options have been permitted.