



# IPC-TM-650 TEST METHODS MANUAL

## 1.0 Scope

**1.1** The purpose of this test method is to provide a procedure for determining the gel time of resin preimpregnated “B” Stage glass fabric.

**2.0 Applicable Documents** None.

## 3.0 Test Specimen

**3.1** Sufficient quantity of prepreg to yield approximately 1000 milligrams of dry resin powder.

## 4.0 Equipment/Apparatus

**4.1** Platen, hot plate or melting point apparatus capable of maintaining a temperature of  $171^{\circ} \pm 0.5^{\circ}\text{C}$  ( $340^{\circ}\text{F} \pm 0.9^{\circ}\text{F}$ ).

**4.2** Timer, capable of determining time within  $\pm 1$  second.

**4.3** Toothpicks.

**4.4** Plastic/polyethylene bags or suitable container.

**4.5** Analytical balance capable of weighing within  $\pm 20$  milligrams.

**4.6** Wire Mesh—60 mesh.

**4.7** Montan Wax.

## 5.0 Procedure

**5.1** Place the prepreg (B-Stage) in a plastic bag or other suitable container, and extract the dry resin from the B-Stage by folding or crushing.

**5.2** Allow the B-Stage resin to collect in the bottom of the plastic bag.

**5.3** Pour the collected resin into a container through 60 wire mesh, to remove any fiber glass particles.

**5.4** Set the melting point apparatus at  $171^{\circ} \pm 0.5^{\circ}\text{C}$  ( $340^{\circ} \pm 0.9^{\circ}\text{F}$ ) and allow to stabilize at that temperature.

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**5.5** Using the analytical balance weigh out  $200 \pm 20$  milligrams of resin on to 3 in. x 3 in. sheet of wax paper or a suitable container.

**5.6** Make sure that the melting point apparatus is clean; mold released with montan wax or equivalent; and wiped free of any visible mold release.

**5.7** Pour 200 milligram sample of resin on the center of the melting point apparatus and start the timing device immediately.

**5.8** Place the tapered end of a round toothpick against the surface of the cure plate (end of the toothpick not in contact with surface of the cure plate will have to be elevated slightly).

**5.9** Roll toothpick back and forth, maintaining contact with the surface of the cure plate until 20 seconds have elapsed.

**5.10** At this time start stroking the resin immediately, using a circular motion 3/8 in. to 1/2 in. in diameter. Stroke in such a manner that every circle moves part of the resin from the center of the pool to the outside, and part of the resin from the outside of the pool toward the center. Care should be taken to limit the pool size to an area 3/4 in. to 7/8 in. in diameter.

**5.11** Keep the toothpick in contact with resin and surface of the cure plate at all times. As the resin becomes stiff, it will not be possible to continue exchanging outside resin with inside resin, but continue stroking with as much exchange as possible without breaking the toothpick.

**5.12** If the resin breaks up, continue stroking the largest piece. If this piece breaks up, continue stroking the largest remaining piece of this portion even though now a larger piece of the original pool may be present at some other place on the hot plate.

**5.13** When the stroked piece separates from the hot plate, stop the watch. This is the end point, and the total elapsed time in the gel time.