The Institute for Interconnecting and Packaging Electronic Circuits
2215 Sanders Road • Northbrook, IL 60062-6135

IPC-TM-650
TEST METHODS MANUAL

Number	
2.4.20	
Subject	
Terminal Bond Strength, Flexible Printed Wiring	
Date	Revision
4/73	
Originating Task Group	
N/A	

1.0 Scope This test method is to determine the terminal bond strength, after repeated soldering and unsoldering, by mechanical pull in the perpendicular plane.

2.0 Applicable Documents None

3.0 Test Specimen Use test coupon ''F'' from test pattern described in part 5.8 of this publication.

4.0 Apparatus

4.1 60-watt soldering iron capable of producing a tip temperature of 232°C to 260°C (450°F to 500°F).

4.2 Vertical pull force tester capable of operating at a speed of 2 inches per minute and measuring up to 20 lbs. load.

5.0 Procedure

5.1 Preparation

5.1.1 Insert and solder 0.017 inch copper wire in holes #10, 12, 14, and 16.

5.1.2 Insert wires so that the portion extending from the soldered side of the circuit may be fitted into the gripping mechanism of a tensile tester.

5.1.3 The leads must not be crimped on the solder side.

5.2 Solder Cycles

5.2.1 The wires shall not be clinched. Subject wires to five cycles of unsoldering and soldering by hand after the initial machine or hand soldering.

5.2.2 During the five cycles the wires shall be completely removed during each soldering operation.

5.2.3 A 60-watt conventional soldering iron operated at a reduced voltage sufficient to produce a tip temperature of 450°F shall be used for the unsoldering and soldering operation.

5.2.4 The iron shall be applied to the leads, not the foil, and shall be applied only as long as necessary to perform the unsoldering or soldering operation.

5.3 Test

5.3.1 Following the fifth cycle, clamp the specimen sufficiently in the jaws of the bond tester to assure that the specimen is perpendicular to the direction of pull.

5.3.2 Apply a pull at the rate of 2 inches per minute (50.8 mm/min.) to the wire on the pattern side of the board.

5.3.3 The load must be applied perpendicular to the major surface of the terminal area until the required poundage is reached, or failure occurs.

5.4 Evaluation Examine specimen for loosening of bond and for loosening of the pad from the dielectric substrate.

6.0 *Notes* Breaking of a wire, or wire pullout shall not be considered as a failure, but the wire shall be resoldered and pulled again.

Material in this Test Methods Manual was voluntarily established by Technical Committees of the IPC. This material is advisory only and its use or adaptation is entirely voluntary. IPC disclaims all liability of any kind as to the use, application, or adaptation of this material. Users are also wholly responsible for protecting themselves against all claims or liabilities for patent infringement. Equipment referenced is for the convenience of the user and does not imply endorsement by the IPC.