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Australian Standard
for
BASIC ENVIRONMENTAL TESTING PROCEDURES FOR ELECTRONICS AND TELECOMMUNICATIONS PURPOSES

Part 2—TESTS

1099.3.4-1980

TEST Ta2: SOLDERABILITY OF PRINTED CIRCUIT BOARDS AND METAL-CLAD BASE LAMINATES
and
APPENDIX D. GUIDE TO TEST T: SOLDERING

This test shall be read in conjunction with Part 1, General.

PREFACE

This document consists of Test Ta2, which supplements the solder bath test method described in Test Ta, Solderability and published as Part of the 3rd group of test methods of AS 1099, and Appendix D, Guide to Test T: Soldering.

Test Ta2 describes a method of simulating the mass soldering of printed circuit boards and metal-clad base laminates. The test is intended to provide reproducible assessments of the degree of difficulty of obtaining a good soldered surface on a specific type of metal-clad board. The results of the test are applicable to any soldering method but are particularly relevant to mass soldering methods such as wave or dip soldering, where contact time between the work and the solder is a critical process parameter.

Appendix D to Test T provides a guide to the philisophy adopted in Test T. It discusses the need to subject components to the thermal stresses of soldering before assembly and the problems of achieving correct stressing. The appendix also emphasizes the absence of correlation between different tests and the difficulty of matching a test to the conditions experienced in production. The parameters affecting the various tests are discussed as are the options open to the user in selecting and assessing tests.

In the application of Test Ta2, reference may be necessary to the following standards:

AS 1522	Metal-clad Base Materials for Printed Circuits Part 1—Test Methods Part 2—Specifications
AS	General Requirements and Measuring Methods for Printed Wiring Boards*

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*In course of preparation.

TEST

2.1 OBJECT. The object of this test is to determine the solderability, and to incorporate a procedure to test for dewetting, of areas required to be solderable on—

(a) single or double-sided metal-clad laminates;

(b) single or double-sided printed wiring boards, with or without plated-through holes;

(c) multilayer printed wiring boards.

NOTE: Double-sided boards must have each face tested individually.

2.2 SPECIMEN. The specimen shall be a rectangle of width 30 ± 1 mm, and of length complying with the requirements of Clause 2.3.3 (a), cut from the laminate or printed wiring board as follows:

(a) *Single and double-sided metal-clad laminate.* An unetched specimen shall be used.

(b) *Single or double-sided printed wiring boards, with or without plated-through holes.* An appropriate part of the typical test patterns given in AS ....*, General Requirements and Measuring Methods for Printed Wiring Boards, shall be used.

(c) *Multilayer printed wiring boards.* An appropriate part of the typical test patterns given in AS ...., General Requirements and Measuring Methods for Printed Wiring Boards, shall be used.

Test specimens shall be manufactured at the same time and under the same conditions as the manufacture of the production batch of printed wiring boards.

When the test specimen is not cut from any of the standard test patterns, the conductor widths, insulation gaps, lands, holes and thermal shunt effects shall be considered. The test specimen shall exclude conductor configurations, etc likely to affect the assessment of solderability. It is not the intention to prove whether a specific design of board will solder. The specimen should be selected to test the solderability of the copper and/or deposited metals.

2.3 TEST APPARATUS.

2.3.1 Solder Bath. A suitable solder bath of depth not less than 40 mm shall be used. If round, the bath shall be not less than 120 mm in diameter, and if rectangular, not smaller than 100 mm × 75 mm in length and width.

2.3.2 Conveyance of Specimen. A mechanical device shall convey the specimen at a range of constant speeds, in a circular path about a horizontal axis, so that the test face makes contact with the molten solder.

The radius of rotation shall pass through the centre of the face of the specimen at right angles, and the distance between the test face and the axis of rotation shall be 100 ± 5 mm (see Fig. 2.1).

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*In course of preparation.