AMERICAN NATIONAL STANDARD

ANSI/J–STD-003
APRIL 1992

JOINT INDUSTRY STANDARD

Solderability Tests for Printed Boards

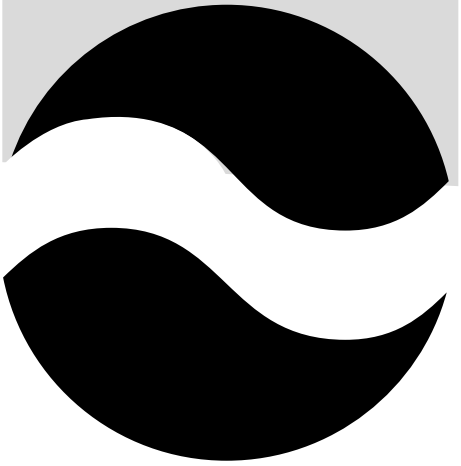

Table of Contents

Figures

Tables

Solderability Tests for Printed Boards

1.0 SCOPE

1.1 Scope This standard prescribes the recommended test methods, defect definitions and illustrations for assessing the solderability of printed board surface conductors, attachment lands, and plated through-holes. This standard is intended for use by both vendor and user.

1.2 Purpose The solderability determination is made to verify that the printed board fabrication processes and subsequent storage have had no adverse effect on the solderability of those portions of the printed wiring board intended to be soldered. This is determined by evaluation of the solderability specimen portion of a board or representative coupon which has been processed as part of the panel of boards and subsequently removed for testing per the method selected.

1.3 Objective The objective of the solderability test methods described in this standard is to determine the ability of printed board surface conductors, attachment lands, and plated through-holes to wet easily with solder and to withstand the rigors of the printed board assembly processes.

1.4 Performance Classes Three general classes have been established to reflect progressive increases in sophistication, functional performance requirements and testing/inspection frequency. It should be recognized that there may be an overlap of equipment categories in different classes. The user has the responsibility to specify in the contract or purchase order the performance class required for each product and shall indicate any exceptions to specific parameters, where appropriate.

Class 1 General Electronic Products

Includes consumer products, some computer and computer peripherals, as well as general military hardware suitable for applications where cosmetic imperfections are not important and the major requirement is function of the completed printed board.

Class 2 Dedicated Service Electronic Products

Includes communications equipment, sophisticated business machines, instruments and military equipment where high performance and extended life is required and for which uninterrupted service is desired but not critical. Certain cosmetic imperfections are allowed.

Class 3 High Reliability Electronic Products

Includes the equipment for commercial and military products where continued performance or performance on demand is critical. Equipment downtime cannot be tolerated and must function when required such as in life support items or missile systems. Printed boards in this class are suitable for applications where high levels of assurance are required and service is essential.

1.5 Method Classification This standard describes test methods by which both the surface conductors (and attachment lands) and plated through-holes may be evaluated for solderability.

Provisions are made for this determination to be performed at the time of manufacture, at the receipt of the boards by the user, or just prior to assembly and soldering. User and vendor shall agree to the appropriate method to be used and their correlation.

Standard dwell times are defined in some of the methods called out in this standard. Variations in board heat capacity may necessitate the use of longer solder dwell times (see paragraph 6.2). Any change in solder dwell shall be agreed upon by user and vendor.

1.5.1 Tests with Established Accept/Reject Criterion

Test A — Edge Dip Test (For surface conductors and attachment lands only)

Test B — Rotary Dip Test (For plated through-holes, surface conductors and attachment lands, solder source side)

Test C — Solder Float Test (For plated through-holes, surface conductors and attachment lands, solder source side)

Test D — Wave Solder Test (For plated through-holes, surface conductors and attachment lands, solder source side)

1.5.2 Test(s) without Established Accept/Reject Criterion

Test E — Wetting Balance Test (For surface conductors and attachment lands only)

Please forward all test data generated using this test method, including type of board tested (such as Type 2 or 12 layer, Type 3), dimensions of coupon tested, and any pretreatment, to:

IPC
Wetting Balance Task Group (PWB)
2215 Sanders Road
Northbrook, IL 60062-6135

1.6 Test Method Selection For appropriate test selection refer to paragraph 1.5 and Tables 1 & 2. The test selection