IPC J-STD-003C-WAM1&2
with Amendments 1 & 2

Solderability Tests for Printed Boards

Developed by the Printed Circuit Board Solderability Specifications Task Group (5-23a) of the Assembly and Joining Committee (5-20) of IPC

Supersedes:
J-STD-003C-WAM1 - May 2014
J-STD-003C - September 2013
J-STD-003B - March 2007
J-STD-003A - February 2003
J-STD-003 - April 1992
IPC-S-804A - January 1987
IPC-S-803
IPC-S-801

Users of this publication are encouraged to participate in the development of future revisions.

Contact:
IPC

Table of Contents

Figures

Tables

Solderability Tests for Printed Boards

1 GENERAL

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

This standard is not intended to verify the potential of successful processing at assembly or to evaluate design impact on wettability. This standard describes procedures or methods to determine the acceptable wettability of a surface finish. Wettability can be affected by handling, finish application, and environmental conditions.

1.2 Purpose This standard describes solderability determinations that are 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 board intended to be soldered. Reference coupons or representative portions of a printed board may be used. Solderability is determined by evaluation of a test specimen which has been processed as part of a panel of boards and subsequently removed for testing per the method selected.

1.3 Objective To provide solderability test methods to determine the acceptance of printed board surface conductors, attachment lands, and PTHs to wet easily with solder, and to withstand the rigors of the printed board assembly processes.

1.3.1 Definition of Requirements The word ‘‘**shall**’’ is used in the text of this document wherever there is a requirement for materials, preparation, process control, or acceptance of a soldered connection or a test method. The word ‘‘should’’ reflects ‘‘best processing techniques’’ and is used to reflect general industry practices and a suggestion for guidance only.

1.3.2 Document Hierarchy In the event of conflict, the following descending order of precedence applies:

a. Procurement documentation AABUS, which should include expected shelf life requirements if stored and handled properly.

b. Master drawing or master assembly drawing reflecting the user’s detailed requirements.

c. When required by the customer or per contractual agreement, this document, J-STD-003.

d. Other documents, to the extent specified by the customer.

1.4 Classification Three general classes have been established to reflect progressive increases in sophistication, functional performance requirements, and testing/ inspection frequency as defined in the IPC-6010 series of documents.

The user is responsible for defining the product class. The product class should be stated in the procurement documentation package.

CLASS 1 General Electronic Products
Includes products suitable for applications where the major requirement is function of the completed assembly.

CLASS 2 Dedicated Service Electronic Products
Includes products where continued performance and extended life is required, and for which uninterrupted service is desired but not critical. Typically, the end-use environment would not cause failures.

CLASS 3 High Performance Electronic Products
Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.

Printed board performance classes do not dictate the surface finish durability rating that may be specified. Category 2/ Category A durability is the default coating durability rating.

This standard relies on input from the 4-14 plating process subcommittee and the 4500 series of printed board surface finish documents generated in that subcommittee to determine the durability rating potential for each specified finish. This document and the appropriate 4500 series document should be considered complimentary to one another.