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JOINT INDUSTRY STANDARD

Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

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Electronic Components Association

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For Technical Information Contact:

ECA
2500 Wilson Boulevard
Arlington, VA 22201
Phone (703) 907-8024
Fax (703) 875-8908

IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, IL 60015-1249
Phone (847) 615-7100
Fax (847) 615-7105

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IPC/ECA J-STD-002C with Amendment 1

Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

A joint standard developed by IPC Component and Wire Solderability Specification Task Group (5-23b) of the Assembly and Joining Processes Committee (5-20) and the Electronic Components, Assemblies and Materials Association (ECA) Soldering Technology Committee (STC)

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

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ECA
2500 Wilson Boulevard
Arlington, VA 22201
Phone (703) 907-8024
Fax (703) 875-8908

IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, IL 60015-1249
Phone (847) 615-7100
Fax (847) 615-7105

Acknowledgment

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Vice Chair
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Rockwell Collins

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Dennis Fritz
MacDermid, Inc.

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Jack McCullen, Intel Corporation
Len Metzger, Panasonic Industrial Company
Renee J. Michalkiewicz, Trace Laboratories - East

Michael Milbrath, BH Electronics
Dr. Kil-Won Moon, NIST
David E. Moore, Defense Supply Center Columbus
Terry L. Munson, Foresite, Inc.
Suzanne F. Nachbor, Honeywell Aerospace Minneapolis
Graham Naisbitt, Gen3 Systems Limited
Gary Nicholls, Enthone Inc. - Cookson Electronics
Benny Nilsson, Ericsson AB
Debora L. Obitz, Trace Laboratories - East
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Yung-Herng Yau, Enthone Inc. - Cookson Electronics
Jason Young, Kemet Electronics Corporation
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Dr. Adam Zbrzezny, AMD

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1 SCOPE

1.1 Scope This standard prescribes test methods, defect definitions, acceptance criteria, and illustrations for assessing the solderability of electronic component leads, terminations, solid wires, stranded wires, lugs, and tabs. This standard also includes a test method for the Resistance to Dissolution/Dewetting of Metallization. This standard is intended for use by both vendor and user.

1.2 Purpose Solderability evaluations are made to verify that the solderability of component leads and terminations meets the requirements established in this standard and to determine that storage has had no adverse effect on the ability to solder components to an interconnecting substrate. Determination of solderability can be made at the time of manufacture, at receipt of the components by the user, or just before assembly and soldering.

The resistance to dissolution of metallization determination is made to verify that metallized terminations will remain intact throughout the assembly soldering processes.

1.2.1 Shall and Should 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 recommendations and is used to reflect general industry practices and procedures for guidance only.

1.2.2 Document Hierarchy In the event of conflict, the following decreasing order of precedence applies:

1. Procurement as agreed between user and supplier.
2. Master drawing or master assembly drawing reflecting the user's detailed requirements.
3. When invoked by the customer or per contractual agreement, this document, J-STD-002.
4. Other documents to extent specified by the customer.

1.3 Method Classification This standard describes methods by which component leads or terminations may be evaluated for solderability. Test A, Test B, Test C, Test D and Test S for tin/lead solder processes and Test A1, Test B1, Test C1, Test D and Test S1 for lead-free solder processes, unless otherwise agreed upon between vendor and user, are to be used for each application as a default.

1.3.1 Visual Acceptance Criteria Tests

Test A – Solder Bath/Dip and Look Test (Leaded Components and Stranded Wires) Tin/Lead Solder (paragraph 4.2.1)

Test B – Solder Bath/Dip and Look Test (Leadless Components) Tin/Lead Solder (paragraph 4.2.2)

Test C – Wrapped Wires Test (Lugs, Tabs, Hooked Leads, and Turrets) Tin/Lead Solder (paragraph 4.2.3)

Test D – Resistance to Dissolution/Dewetting of Metallization Test Tin/Lead Solder and Lead-free Solder (paragraph 4.2.4)

Test S – Surface Mount Process Simulation Test Tin/Lead Solder (paragraph 4.2.5)

Test A1 – Solder Bath/Dip and Look Test (Leaded Components and Stranded Wires) Lead-free Solder (paragraph 4.2.6)

Test B1 – Solder Bath/Dip and Look Test (Leadless Components) Lead-free Solder (paragraph 4.2.7)

Test C1 – Wrapped Wires Test (Lugs, Tabs, Hooked Leads, and Turrets) Lead-free Solder (paragraph 4.2.8)

Test S1 – Surface Mount Process Simulation Test Lead-free Solder (paragraph 4.2.9)

1.3.2 Force Measurement Tests

Test E – Wetting Balance Solder Pot Test (Leaded Components) Tin/Lead Solder (paragraph 4.3.1)

Test F – Wetting Balance Solder Pot Test (Leadless Components) Tin/Lead Solder (paragraph 4.3.2)

Test G – Wetting Balance Globule Test Tin/Lead Solder (paragraph 4.3.3)

Test E1 – Wetting Balance Solder Pot Test (Leaded Components) Lead-free Solder (paragraph 4.3.4)

Test F1 – Wetting Balance Solder Pot Test (Leadless Components) Lead-free Solder (paragraph 4.3.5)

Test G1 – Wetting Balance Globule Test Lead-free Solder (paragraph 4.3.6)

These methods (1.3.2) are included for evaluation purposes only. Data collected should be submitted to the IPC Wetting Balance Task Group for correlation and analysis. Tests E, F, G, E1, F1 and G1 **shall not** be used for acceptance/rejection without user and vendor agreement.