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# *JOINT INDUSTRY STANDARD*

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



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

## 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 wire, stranded wire, lugs, and tabs. 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 that subsequent 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.

**1.3 Method Classification** This standard describes methods by which component leads or terminations may be evaluated for solderability. Test A, Test B, or Test C and Test D, unless otherwise agreed upon between vendor and user, are to be used for each application as a default.

### 1.3.1 Tests with Established Accept/Reject Criterion

*Test A* – Solder Bath/Dip and Look Test (Leaded Components and Stranded Wire)

*Test B* – Solder Bath/Dip and Look Test (Leadless Components)

*Test C* – Wrapped Wire Test (Lugs, Tabs, Hooked Leads, and Turrets)

*Test D* – Resistance to Dissolution/Dewetting of Metallization Test

*Test S* – Surface Mount Process Simulation Test

### 1.3.2 Test without Established Accept/Reject Criterion

*Test E* – Wetting Balance Test (Leaded Components)

*Test F* – Wetting Balance Test (Leadless Components)

These methods are included for evaluation purposes only. Data collected should be submitted to the IPC-Wetting Balance Task Group for correlation and analysis.

**1.4 Coating Durability** The following are guidelines for determining the needed level of steam age category assur-

ance (see Table 1). The user shall specify to the vendor, as part of the purchase agreement, the required coating durability. If this is not provided, Coating Durability Category 3 becomes the default condition for tin and tin/lead finishes.

*Category 1 — Minimum Coating Durability* Intended for surfaces which will be soldered within a short period of time (e.g., up to six months) from the time of testing and are likely to experience a minimum of thermal exposures before soldering (see 5.8).

*Category 2 — Typical Coating Durability (for non-tin and non tin-lead finishes)* Intended for surfaces finished with other than Sn or Sn/Pb coatings which will be soldered after an extended time from the time of testing and which may see limited thermal exposures before soldering (see 5.8).

*Category 3 — Typical Coating Durability (default for tin and tin-lead finishes)* Intended for surfaces finished with Sn or Sn/Pb coatings which will be soldered after an extended storage (e.g., greater than four months) from the time of testing and/or which see multiple thermal exposures before soldering (see 5.8).

**Table 1 Steam Aging Categories for Component Leads and Terminations**

Category 1	Category 2	Category 3
No Steam Aging Requirements	1 Hour ± 5 min. Steam Aging	8 Hours ± 15 min. Steam Aging

**1.5 Referee Verification Solder Dip for Tests A, B, C** When the dipped portion of the termination exhibits anomalies such as surface roughness, or dross, or anomalies which may have been induced by improper solder dipping, a referee verification solder dip of the suspect anomaly may be necessary. Upon reinspection if the suspect anomaly has been removed, the anomaly will have been verified as a nonrejectable cosmetic surface defect. If the anomaly persists, regardless of area, it shall be classified a rejectable solderability defect. This procedure can only be used on one component per lot. Continuous need of procedure is an indication of either improper testing procedure, examination interpretation, or of poor component quality.

**1.6 Limitation** This standard shall not be construed as a production procedure for the pretinning of leads and terminations.