The Principles of Standardization

In May 1995 the IPC’s Technical Activities Executive Committee adopted Principles of Standardization as a guiding principle of IPC’s standardization efforts.

**Standards Should:**
- Show relationship to Design for Manufacturability (DFM) and Design for the Environment (DFE)
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

**Standards Should Not:**
- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

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Adopted October 6, 1998

Why is there a charge for this standard?

Your purchase of this document contributes to the ongoing development of new and updated industry standards. Standards allow manufacturers, customers, and suppliers to understand one another better. Standards allow manufacturers greater efficiencies when they can set up their processes to meet industry standards, allowing them to offer their customers lower costs.

IPC spends hundreds of thousands of dollars annually to support IPC’s volunteers in the standards development process. There are many rounds of drafts sent out for review and the committees spend hundreds of hours in review and development. IPC’s staff attends and participates in committee activities, typesets and circulates document drafts, and follows all necessary procedures to qualify for ANSI approval.

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Qualification and Performance of Permanent Solder Mask

1.2 Purpose

**Paragraph 1:**

Replace:

IPC-RB-276

With:

IPC-6011 and IPC-6012

**Add the following paragraph at the end of section:**


13.2.1 General “R13-11 [813] In lieu of the requirements in this section for solder mask, testing to IPC-SM-840C, January 1996, Class “T” requirements shall be acceptable. The requirements contained in the IPC document are similar or equivalent to the ones contained herein.”

1.3 Classes

**Add the following paragraph at the end of section:**

**Note:** Solder mask types were previously described as Type A for screen imaged (liquid) or coverlay for flex (dry), and Type B for all types of photo defined solder mask (liquid or dry film).

3.4.1 Formulation Change

**4th bullet point**

Replace:

• Changes in type of dye or pigment.

With:

• Changes in type of dye or pigment, excluding coloring dye or pigment within a defined, tested range of lowest (none) and highest (supplied) loading levels of the specific coloring materials.

**6th bullet point**

Replace:

• Addition, deletion or change in composition of “inert” materials in the formulation such as matting agent(s).

With

• Addition, deletion or change in composition of “inert” materials in the formulation such as matting agent(s), excluding a change in quantity of a single “inert” material already present in the formula within a defined, tested range of lowest (none) and highest (supplied) loading levels of that specific “inert” material. Change to more than one material is considered a formulation change.

2.1 IPC

<table>
<thead>
<tr>
<th>Replace the following:</th>
<th>With the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC-RB-276 Qualification and Performance of Rigid Printed Boards</td>
<td>IPC-6011 Generic Performance Specification for Printed Boards</td>
</tr>
<tr>
<td></td>
<td>IPC-6012 Qualification and Performance specification for Rigid Printed Boards</td>
</tr>
<tr>
<td>TM 2.3.25 Detection of Ionizable Surface Contamination (Static Method)</td>
<td>TM 2.3.25 Detection and Measurement of Ionizable Surface Contaminants</td>
</tr>
<tr>
<td>TM 2.3.26 Detection of Ionizable Surface Contamination (Dynamic Method)</td>
<td>TM 2.3.26.1 Ionizable Detection of Surface Contamination (Static Method)</td>
</tr>
<tr>
<td>TM 2.3.38 Inspection Test for Organic Contaminates on Printed Wiring Board and Assembly Surfaces</td>
<td>TM 2.3.38 Surface Organic Contaminant Detection Test</td>
</tr>
<tr>
<td>TM 2.3.39 Identification of Residual Organic Non-Ionic Contaminates on Printed Wiring Boards and Assembly Surfaces</td>
<td>TM 2.3.39 Surface Organic Contaminant Identification Test (Infrared Analytical Method)</td>
</tr>
<tr>
<td>TM 2.4.28.1 Adhesion, Solder Mask (Over Melting and Non-Melting Metals)</td>
<td>TM 2.4.28.1 Adhesion, Solder Resist (Mask), Tape Test Method</td>
</tr>
<tr>
<td>TM 2.6.3.1 Moisture and Insulation Resistance Polymeric Solder Masks and Conformal Coating</td>
<td>TM 2.6.3.1 Moisture and Insulation Resistance – Solder Masks</td>
</tr>
<tr>
<td>TM 2.6.7.1 Thermal Shock – Polymer Solder Mask Coatings</td>
<td>TM 2.6.7.3 Thermal Shock – Solder Mask</td>
</tr>
<tr>
<td>TM 2.6.11 Hydrolytic Stability – Solder Masks and Conformal Coating</td>
<td>TM 2.6.11 Hydrolytic Stability – Solder Mask</td>
</tr>
</tbody>
</table>

3.4.5 Cure

Add sentence at the end of Note:

Contact manufacturer of solder mask to determine method to test cure.

3.4.10 Dimensional Requirements

Replace:

If a specific thickness or breakdown voltage is required it shall be specified by the end user on the procurement document.

With:

If a specific thickness or breakdown voltage is required or allowed it shall be specified by the end user on the procurement document.

Table 1 Thermal Shock IPC Test Method

Replace:

2.6.7.1

With:

2.6.7.3

Table 4

Delete and replace with:

<table>
<thead>
<tr>
<th>Class</th>
<th>Test Temperature</th>
<th>Test Humidity</th>
<th>Bias Voltage (VDC)</th>
<th>Test Voltage (VDC)</th>
<th>Duration</th>
<th>Test Pattern IPC-B-25A Board</th>
<th>Requirements (megohm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>65° ± 2°C [149° ± 3.6°F]</td>
<td>90 ± 3 %</td>
<td>0</td>
<td>100</td>
<td>24 hours</td>
<td>E and F, C</td>
<td>500</td>
</tr>
<tr>
<td>H</td>
<td>25° to 65° ± 2°C [77° to 149° ± 3.6°F]</td>
<td>90, -5, + 3%</td>
<td>50</td>
<td>100</td>
<td>6 2/3 days</td>
<td>D, C</td>
<td>500</td>
</tr>
</tbody>
</table>

Table 5

Delete and replace with:

<table>
<thead>
<tr>
<th>Class</th>
<th>Test Temperature</th>
<th>Test Humidity</th>
<th>Bias Voltage (VDC)</th>
<th>Test Voltage (VDC)</th>
<th>Duration</th>
<th>Test Pattern IPC-B-25A Board</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>85° ± 2°C [185° ± 3.6°F]</td>
<td>85% minimum</td>
<td>10</td>
<td>45 - 100</td>
<td>500 hours</td>
<td>D, C</td>
<td>&lt; 1 decade drop in resistance</td>
</tr>
<tr>
<td>H</td>
<td>85° ± 2°C [185° ± 3.6°F]</td>
<td>90%</td>
<td>10</td>
<td>10</td>
<td>168 hours</td>
<td>D, C</td>
<td>Resistance ≥ 2 megohms</td>
</tr>
</tbody>
</table>
3.9.3 Thermal Shock

Replace:

TM 2.6.7.1

With:

TM 2.6.7.3

Table 7

Replace row:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Paragraph</th>
<th>Test Method</th>
<th>D* or N</th>
<th>Class T</th>
<th>Class H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture and Insulation Resistance (comb pattern)</td>
<td>3.9.1</td>
<td>2.6.3.1</td>
<td>D</td>
<td>≥500 megohms (B-25A or B-25)</td>
<td>≥100 megohms (B-25A)</td>
</tr>
</tbody>
</table>

With:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Paragraph</th>
<th>Test Method</th>
<th>D* or N</th>
<th>Class T</th>
<th>Class H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture and Insulation Resistance (comb pattern)</td>
<td>3.9.1</td>
<td>2.6.3.1</td>
<td>D</td>
<td>≥500 megohms (IPC-B-25A Board, Pattern E and F)</td>
<td>≥500 megohms (IPC-B-25A Board, Pattern D)</td>
</tr>
</tbody>
</table>

Thermal Shock Test Method

Replace:

2.6.7.1

With:

2.6.7.3

4.6.1 Inspection of Product for Delivery

Replace:

IPC-RB-276

With:

IPC-6011 and IPC-6012

4.7.1 Preparation Prior to Coating

Replace:

TM 2.3.26, TM 2.3.26.1

With:

TM 2.3.25.1