The Principles of Standardization

In May 1995 the IPC’s Technical Activities Executive Committee (TAEC) 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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Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies

1.3.2 Classes

Replace as follows:

Although previous versions of IPC-CC-830 made reference to Class A and Class B coating classifications, these classifications have been removed. To be qualified to this specification, a coating must be hydrolytically stable (formerly Class B). Non-hydrolytically stable coatings (formerly Class A) no longer meet the requirements of this specification and usage will only be As Agreed Between User and Supplier (AABUS). Coatings that meet the requirements of Class B coatings in previous document revisions meet the requirements of this revision.

Note: Earlier versions of this specification, as well as other IPC documents, made reference to “Class 1,” “Class 2,” and “Class 3” inspection and testing requirements for these classes that were not directly correlated to the previous Class A and B requirements.

2.1 IPC

Delete the following from the IPC-TM-650 Test Methods Manual listing:

2.3.42 Identification of Solder Mask Products Using Fourier Transform Infrared Spectroscopy (FTIR)

2.5 ANSI

Correct title of NCSL Z540-1 document as follows:

NCSL Z540-1 Calibration Laboratories and Measuring and Test Equipment

3.1.1 Terms and Definitions

Replace as follows:

Definitions of terminology applicable to this standard shall be in accordance with IPC-T-50 and as stated in 3.1.1.1.

3.1.1.1 AABUS This is an acronym for “As Agreed Between User and Supplier.” Indicates additional or alternate requirements to be decided between the user and supplier in the procurement documentation. Examples include contractual requirements, modifications to purchase documentation, and information on the drawing. Agreements can be used to define test methods, conditions, frequencies, categories or acceptance criteria within a test, if not already established.

3.2.1 Qualification Inspection and Testing

Replace 2nd paragraph as follows:

Conformal coatings presently qualified to MIL-I-46058 shall also be recognized as meeting the requirements of IPC-CC-830. These products currently qualified or in the process of being requalified to MIL-I-46058 prior to the publish date of this document will also be recognized as meeting the requirements of this document. It should be noted that MIL-I-46058 is inactive for new designs.

<table>
<thead>
<tr>
<th>Table 3-1 Requirements for Qualification, Qualification Retention and Quality Conformance of Conformal Coating Products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paragraph</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>3.4.1</td>
</tr>
</tbody>
</table>

Replace thirteenth row as follows:

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement</th>
<th>Test Method</th>
<th><strong>Column A</strong></th>
<th><strong>Column B</strong></th>
<th><strong>Column C</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7.1</td>
<td>Moisture and Insulation Resistance</td>
<td>IPC-TM-650 2.6.3.4</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Replace fifteenth row as follows:

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement</th>
<th>Test Method</th>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7.3</td>
<td>Temperature and Humidity Aging (Hydrolytic Stability)</td>
<td>IPC-TM-650 2.6.11.1</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Delete the following notes following table 3-1:

X Denotes inspection and test required for all classes.
* Denotes requirement is different for Class A and Class B. See 3.7.1 for Class A and B requirements.

3.3.2 Shelf Life

Replace the third sentence as follows:
Tests to verify shelf life shall consist of Insulation Resistance (IR) and Dielectric Withstanding Voltage (DWV).

3.4.1 Fourier Transform Infrared Spectroscopy Test (FTIR)

Replace first sentence as follows:
Fourier Transform Infrared Spectroscopy (FTIR) test shall be performed AABUS as part of data gathering for the conformal coating during qualification inspection.

3.7.1 Moisture and Insulation Resistance

2nd paragraph, replace as follows:
The minimum insulation resistance shall be 500 MΩ for type ER and 5000 MΩ for all other types during humidity, after humidity and one to two hours at reference conditions, and after 24 hours at reference conditions.

3.7.3 Temperature and Humidity Aging (Hydrolytic Stability)

Replace as follows:
Conformal coating products shall be tested in accordance with IPC-TM-650, Test Method 2.6.11.1.

The control specimen shall be maintained at the reference conditions at 25 ± 5 °C [77 ± 9 °F] and 50 ± 5% relative humidity. The aged conformal coating shall be tack free to touch.

There shall be no evidence of softening, chalking, blistering, surface tack, cracking, loss of adhesion or reversion to the liquid state. The clarity of the conformal coating must remain suitable for the viewing of identification markings and color codes used to identify components over which the conformal coating is applied.

Append new subsection 3.8 as follows:

3.8 Special Requirements

Any special requirements are AABUS and shall be noted in the procurement documentation.

4.2 Categories of Inspection

Change title of 4.2 to read as follows:

4.2 Categories of Inspection and Frequency

Append subsection 4.2.1.1 as follows:

4.2.1.1 Qualification Inspection Frequency

Conformal coating qualification inspection shall be performed once on each conformal coating product.

Append subsection 4.2.2.1 as follows:

4.2.2.1 Qualification Retention Inspection

Conformal coating qualification retention inspection shall be performed once every two years on each conformal coating product in order to prove consistent compliance to the original qualification.

Append subsection 4.2.3.1 as follows:

4.2.3.1 Quality Conformance Inspection

Conformal coating conformance inspection shall be performed for every batch of conformal coating product. A batch shall consist of all conformal coating materials produced by one continuous run. Batch identification is required (see 5.3).

4.3 Frequency of Inspection

Delete 4.3, 4.3.1, 4.3.2 and 4.3.3

Renumbe 4.4 through 4.9.3 as 4.3 through 4.8.3.
Appendix A – Example of Qualification Inspection Report

Delete the following from the [ ] Pass section of the Overall Qualification Results:

[ ] Class A Non-hydrolytically Stable Product
[ ] Class B Hydrolytically Stable Product

Replace row entitled “Fourier Transform Infrared Spectroscopy” as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Paragraph in IPC-CC-830B</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourier Transform Infrared Spectroscopy Test (FTIR)</td>
<td>AABUS</td>
<td>3.4.1</td>
<td>Spectrum to be retained for future reference</td>
<td></td>
</tr>
</tbody>
</table>

Replace row entitled “Moisture and Insulation Resistance” as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Paragraph in IPC-CC-830B</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture and Insulation Resistance</td>
<td>IPC-TM-650</td>
<td>2.6.3.4</td>
<td>[ ] Pass 500 MΩ minimum [ ] Pass 5000 MΩ minimum [ ] Fail</td>
<td></td>
</tr>
</tbody>
</table>

Appendix B – Example of Qualification Retention Inspection Report

Replace row entitled “Fourier Transform Infrared Spectroscopy” as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Paragraph in IPC-CC-830B</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourier Transform Infrared Spectroscopy Test (FTIR)</td>
<td>AABUS</td>
<td>3.4.1</td>
<td>Spectrum to be compared with that from the original qualification test [ ] Pass [ ] Fail</td>
<td></td>
</tr>
</tbody>
</table>

Replace row entitled “Moisture and Insulation Resistance” as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Paragraph in IPC-CC-830B</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture and Insulation Resistance</td>
<td>IPC-TM-650</td>
<td>2.6.3.4</td>
<td>[ ] Pass 500 MΩ minimum [ ] Pass 5000 MΩ minimum [ ] Fail</td>
<td></td>
</tr>
</tbody>
</table>