IPC-CC-830B

Amendment 1

Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies

September 2008

A standard developed by IPC

Association Connecting Electronics Industries

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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 3-1 Requirements for Qualification, Qualification Retention and Quality Conformance of Conformal Coating Products

Replace fifth row as follows:

			Column A	Column B	Column C
Paragraph	Requirement	Test Method	Qualification	Retention of Qualification	Quality Conformance
3.4.1	Fourier Transform Infrared Spectroscopy Test (FTIR)	AABUS	X	X	

Replace thirteenth row as follows:

			Column A	Column B	Column C
Paragraph	Requirement	Test Method	Qualification	Retention of Qualification	Quality Conformance
3.7.1	Moisture and Insulation Resistance	IPC-TM-650 2.6.3.4	X	X	

Replace fifteenth row as follows:

Paragraph	Requirement	Test Method	Column A Qualification	Column B Retention of Qualification	Column C Quality Conformance
3.7.3	Temperature and Humidity Aging (Hydrolytic Stability)	IPC-TM-650 2.6.11.1	X		

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 Quality 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

Renumber 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:

Test	Test Method	Paragraph in IPC-CC-830B	Results	Remarks
Fourier Transform Infrared Spectroscopy Test (FTIR)	AABUS	3.4.1	Spectrum to be retained for future reference	

Replace row entitled "Moisture and Insulation Resistance" as follows:

Test	Test Method	Paragraph in IPC-CC-830B	Results	Remarks
Moisture and Insulation Resistance	IPC-TM-650 2.6.3.4	3.7.1	[ ] Pass 500 MΩ minimum [ ] Pass 5000 MΩ minimum [ ] Fail	

Appendix B – Example of Qualification Retention Inspection Report

Replace row entitled "Fourier Transform Infrared Spectroscopy" as follows:

Test	Test Method	Paragraph in IPC-CC-830B	Results	Remarks
Fourier Transform Infrared Spectroscopy Test (FTIR)	AABUS	3.4.1	Spectrum to be compared with that from the original qualification test [ ] Pass [ ] Fail	

Replace row entitled "Moisture and Insulation Resistance" as follows:

Test	Test Method	Paragraph in IPC-CC-830B	Results	Remarks
Moisture and Insulation Resistance	IPC-TM-650 2.6.3.4	3.7.1	[ ] Pass 500 MΩ minimum [ ] Pass 5000 MΩ minimum [ ] Fail	