



ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

IPC-CC-830B

Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies

Developed by the Conformal Coating Task Group (5-33a) of the Cleaning and Coating Committee (5-30)



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

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Table of Contents

1 SCOPE	1	3.7.2 Thermal Shock	4
1.1 Scope	1	3.7.3 Temperature and Humidity Aging (Hydrolytic Stability)	4
1.2 Purpose	1	4 QUALITY ASSURANCE PROVISION	5
1.3 Classification	1	4.1 Responsibility for Inspection	5
1.3.1 Types.....	1	4.2 Categories of Inspection	5
1.3.2 Classes	1	4.2.1 Qualification Inspection	5
1.4 Interpretation	1	4.2.2 Qualification Retention Inspection	5
2 APPLICABLE DOCUMENTS	1	4.2.3 Quality Conformance Inspection	5
2.1 IPC	1	4.3 Frequency of Inspection	5
2.2 Government	2	4.3.1 Qualification Inspection	5
2.3 American Society for Testing of Materials	2	4.3.2 Qualification Retention Inspection	5
2.4 Underwriters Laboratories	2	4.3.3 Quality Conformance Inspection	5
2.5 ANSI	2	4.4 Product Change	5
2.6 ISO	2	4.5 Test Equipment and Inspection Facilities.....	5
3 REQUIREMENTS	2	4.5.1 Standard Laboratory Conditions	5
3.1 General Requirements	2	4.5.2 Permissible Temperature Variation in Environmental Chambers.....	6
3.1.1 Terms and Definitions	2	4.5.3 Reference Conditions	6
3.1.2 Conflict	2	4.6 Inspection Routine.....	6
3.2 Inspection and Testing Requirements	2	4.7 Inspection Sampling	6
3.2.1 Qualification Inspection and Testing	2	4.7.1 Test Vehicles	6
3.2.2 Qualification Retention Inspection and Testing	2	4.7.2 Sample Size	6
3.2.3 Quality Conformance Inspection Testing	2	4.7.3 Preparation Prior to Coating	6
3.2.4 Additional Testing	3	4.7.4 Coating.....	7
3.3 Materials Requirements	3	4.8 Failures	7
3.3.1 Materials	3	4.9 Inspection Reporting	7
3.3.2 Shelf Life.....	3	4.9.1 Qualification Reporting.....	7
3.3.3 Cure	3	4.9.2 Qualification Retention Reporting	7
3.4 Chemical Requirements	3	4.9.3 Quality Conformance Reporting.....	7
3.4.1 Fourier Transform Infrared Spectroscopy Test (FTIR).....	3	5 PREPARATION FOR DELIVERY	7
3.5 Physical Requirements	4	5.1 Containers.....	7
3.5.1 Viscosity	4	5.2 Packaging.....	8
3.5.2 Appearance	4	5.3 Marking	8
3.5.3 Fluorescence	4	6 NOTES	8
3.5.4 Fungus Resistance	4	6.1 Order Data	8
3.5.5 Flexibility.....	4	6.2 Formulation Change.....	8
3.5.6 Flammability.....	4	6.3 Conditioning	8
3.6 Electrical Requirements	4	6.4 Cleanliness.....	8
3.6.1 Dielectric Withstanding Voltage (DWV).....	4	6.5 Adhesion	8
3.7 Environmental Requirements	4	6.6 Solvent Compatibility	8
3.7.1 Moisture and Insulation Resistance.....	4	6.7 Identification of Solvent Sensitive Conformal Coatings	8

Appendix A	Example of Qualification Inspection Report.....	9
Appendix B	Example of Qualification Retention Inspection Report	10
Appendix C	Example of Quality Conformance Inspection Report	11

Figures

Figure 4-1	IPC-B-25A.....	7
Figure 4-2	Test Coupon with “Y” Shape Pattern	7

Tables

Table 3-1	Requirements for Qualification, Qualification Retention and Quality Conformance of Conformal Coating Products	3
Table 4-1	Test Vehicles and Sample Sizes.....	6
Table 4-2	Thickness Requirements on Test Vehicle	7

Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies

1 SCOPE

1.1 Scope This standard establishes qualification and conformance requirements for electrical insulating compounds (conformal coatings). It has been designed and constructed with the intent of obtaining maximum confidence in the materials with minimum test redundancy. This standard covers:

- The qualification and qualification retention of the conformal coating material (Table 3-1, Column A and B).
- The quality conformance of conformal coating material properties (Table 3-1, Column C).

For the purpose of this standard, the term conformal coating is used herein when referring to a type of protective coating for use on printed wiring assemblies. The conformal coating is intended to provide protection from moisture and contamination and provide electrical insulation; not as a sole source of mechanical support.

For the purpose of this standard, inspections are performed on standardized test vehicles instead of real production assemblies. A standardized test vehicle refers to the test vehicle specified per test method indicated, coated with the conformal coating under inspection.

1.2 Purpose With standardized testing on standardized test vehicles under test conditions specified in test methods listed herein, this standard enables a manufacturer to qualify his conformal coating product and express the qualification it possesses. This standard also enables the manufacturer to attest the conformance of the quality of production to the qualification of each product.

1.3 Classification

1.3.1 Types Conformal coatings **shall** be categorized into types by the cured chemistry of the coating. The type for multifunctional materials **shall** be based on the chemistry type which is the highest percentage by weight.

Conformal coatings **shall** be of the following types:

Type AR — Acrylic
 Type ER — Epoxy
 Type SR — Silicone
 Type UR — Polyurethane
 Type XY — Paraxylylene

1.3.2 Classes This standard allows a manufacturer to classify his qualified products according to functional capabilities. Inspection and testing requirements are different for each class. Classification attained **shall** be reported in the qualification inspection report. An example of the report format is shown in Appendix A.

Conformal coatings **shall** be of the following classes:

Class A — Non-hydrolytically stable conformal coating. Temperature and humidity aging test is not required for this class of product. Lower moisture insulation resistance is permitted (see 3.7.1).

Class B — Hydrolytically stable conformal coating. Temperature and humidity aging test is required for this class of product. Higher moisture insulation resistance is required (see 3.7.1).

Note: Previous versions of this specification, and other IPC documents, make reference to “Class 1,” “Class 2” and “Class 3.” Inspection and testing requirements for these classes are not directly correlated to Class A and B.

1.4 Interpretation “**Shall**,” the imperative form of the verb, is used throughout this standard whenever a requirement is intended to express a provision that is mandatory. Deviation from a “**shall**” requirement may be considered if sufficient data is supplied to justify the exception.

The words “should” and “may” are used whenever it is necessary to express non-mandatory provisions. “Will” is used to express a declaration of purpose.

To assist the reader, the word “**shall**” is presented in bold characters.

2 APPLICABLE DOCUMENTS

The following documents of the issue currently in effect form a part of this standard to the extent specified herein.

2.1 IPC¹

IPC-B-25A Multipurpose Test Board

IPC-T-50 Terms and Definitions for Interconnecting and Packaging Electronic Circuits

IPC-TM-650 Test Methods Manual²

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

1. www.ipc.org

2. Current and revised IPC Test Methods are available through IPC-TM-650 subscription and on the IPC Web site (www.ipc.org/html/testmethods.htm).