



Performance, Validation and Certification Testing for Conformal Coatings

UL offers comprehensive conformal coating testing that covers a variety of your needs.

UL can assist by being the main provider for all your conformal coating testing needs and can work with you at any stage, including product development, to help your products reach the market faster than ever.

Conformal coatings are applied to electronic circuits to provide a barrier to moisture and contamination and to provide electrical insulation. The most common test specifications are: UL 746E, IPC-CC-830 and IEC-60664-3.

Research, Validation & Certification Testing

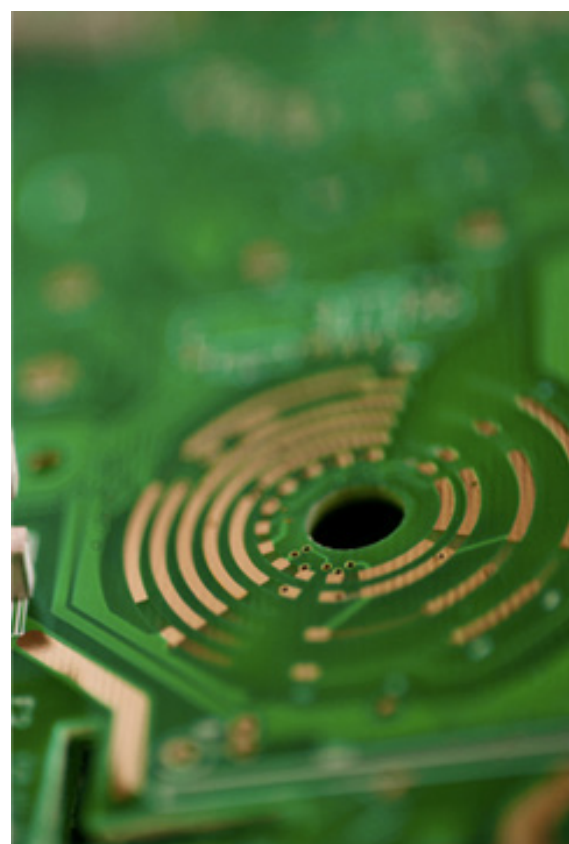
- UL 94 flammability, UL 746E electrical testing, etc. (See page 2 for a detailed list)
- Validation test results may be used towards certification
- Modular services towards final certification

IPC-CC-830 - Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies

- UL may conduct third party validation testing
- Alternative to MIL-I 46058C
- Continued qualification testing available

IEC 60664-3 - Insulation Coordination for Equipment Within Low-Voltage Systems, Part 3: Use of Coatings to Achieve Insulation Coordination of Printed Board Assemblies

- UL may conduct third party validation testing to end product requirements
- Testing is based on the final PCB design



Conformal Coating Testing

Material testing specific to conformal coating applications is included below. Other less common standard or customized requirements can often be performed upon request.

Validation and Certification Testing

Detailed Service	Test Methods
Burning Test	UL 94 V (Vertical)
Burning Rate	UL 94 VTM (Vertical)
Burning Test	UL 94 HB (Horizontal)
Identification, FTIR	-
Comparative Tracking Index	ASTM D 3638
IEC Comparative Tracking Index	IEC 60112
Voltage Transient, Dielectric Voltage-Withstand and Breakdown-Voltage after Conditioning	UL746E; Section 22
- As Received (Unconditioned)	Indoor or Outdoor applications
- Environmental Conditioning	168 hr/ 92% RH/ 35 C
- Humidity Conditioning	300 or 1000 hrs at elevated temp
- Thermal Conditioning	-
- Abrasion Resistance	-

IPC-CC-830 Testing

Detailed Service / Requirement	Test Methods
Materials (§ 3.3.1)	-
Shelf Life (§ 3.3.2)	-
Cure (§ 3.3.3)	-
Fourier Transform Infrared Spectroscopy (FTIR) (§ 3.4.1)	IPC-TM-650 2.3.42
Viscosity (§ 3.5.1)	ASTM D-1084
Appearance (§ 3.5.2)	-
Fluorescence (§ 3.5.3)	-
Fungus Resistance (§ 3.5.4)	IPC-TM-650 2.6.1.1
Flexibility (§ 3.5.5)	IPC-TM-650 2.4.5.1
Flammability (§ 3.5.6)	UL 94HB
Dielectric Withstand Voltage (§ 3.6.1)	IPC-TM-650 2.5.7.1
Moisture and Insulation Resistance (§ 3.7.1)	IPC-TM-650 2.6.3.4
Thermal Shock (§ 3.7.2)	IPC-TM-650 2.6.17.1
Temperature and Humidity Aging (Hydrolytic Stability) (§ 3.7.3)	IPC-TM-650 2.6.11.1

IEC 60664-3 Testing

Detailed Service / Requirement	Test Method
Scratch Resistance Test	-
Adhesion of Coating	-
Visual Examination	IEC 61189-3
Insulation Resistance between Conductors	IEC 61189-3: 2007
AC Withstand Voltage Test	IEC 60064-1
Partial Discharge	IEC 60064-1
Conditionings Prior to Above Tests	
- Cold Conditioning	IEC 60068-2-1
- Dry Heat	IEC 60068-2-2
- Rapid Change of Temp	IEC 60068-2-14
- Damp Heat, Steady State with Polarized Voltage	IEC 60068-2-78
- Electromigration	IEC 60068-2-1
Resistance to Soldering Heat	IEC 61189-3:2007
Flammability	IEC 61189-3:2007
Solvent Resistance	IEC 60326-2