Protect-R-Shield
Precision Conformal Coating

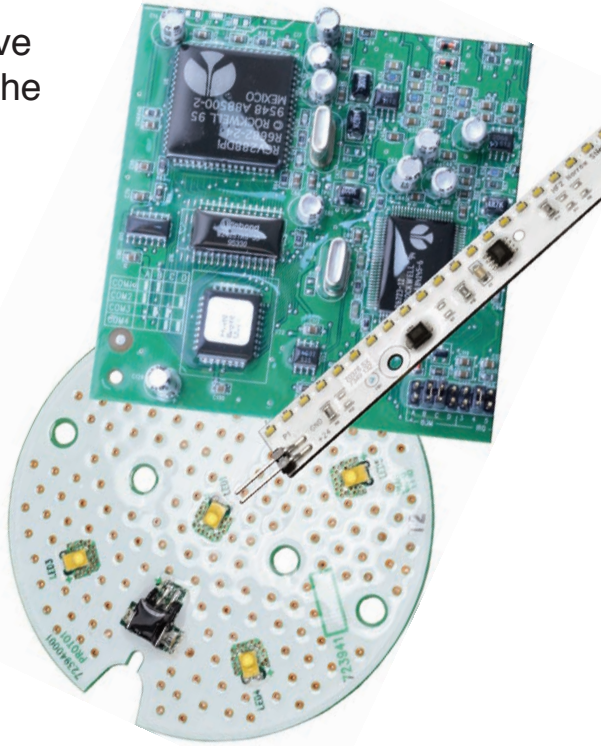
Protecting LEDs and Printed Circuit Boards From Corrosion

moisture • dust • contaminants • salt spray
thermal shock • organic growth

Protect-R-Shield: Tested and Proven

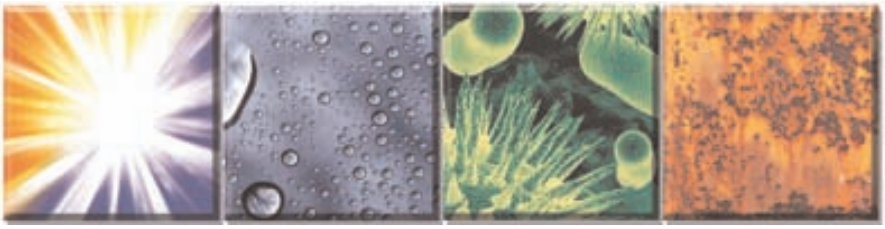
IPC-CC-830B certified (IPC-TM-650)/ UL tested

Protect-R-Shield silicone coating has undergone extensive testing performed by independent testing laboratories. The silicone coating has passed the industries toughest and most rigorous IPC and UL testing requirements for electronic circuit boards and LED assemblies.



Tested for:

•Fungus resistance •Flexibility •Flammability •Dielectric Strength
•Moisture and Insulation •Thermal Shock •Salt Fog/Corrosion
•Temperature and Humidity Aging •Humidity Exposure



Intertek **Independent Environmental Testing for Protect-R-Shield Conformal Coating**

Test	Description	Description	Pass/Fail
UL 8750, Section 8.12	Humidity Exposure	168 hours relative humidity 88 ± 2% @ 32.0° ± 2.0°C	Pass
IEC 60529, Section 14.2.7	Water Immersion	Completely immersed in water to a level of 850mm and 1000mm for 30 minutes	Pass
UL 50E, Section 8.7	Corrosion test/ Salt Spray	24 hrs./ 168 hrs. Salinity 5.5%, Ph 6.6, Fallout 1.4 to 1.5ml/h, temperature 95°F	Pass
	Thermal Shock	Samples need to perform after rapidly changing temperature from -40°C to 150°C. 5 cycles- One hour at 150°C then one hour at -40°C with a transfer rate of less than one minute	Pass

protect-r-shield®
PRECISION CONFORMAL COATING

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TRACE Laboratories

IPC-CC-830B Qualification Testing September 2, 2011

Test	Description	Result	Pass/Fail
3.3.1	Materials	No deleterious substances	Pass
3.3.2	Shelf Life	No flashover, sparkover, or breakdown	Pass
3.3.3	Cure	Cured conformal coating exhibited the desired hardness	Pass
3.4.1	Fourier Transform Infrared Spectroscopy		Pass
3.5.1	Viscosity	Material meets specified viscosity	Pass
3.5.2	Appearance	Conformal coating was smooth, homogeneous, transparent or translucent, and tack-free	Pass
3.5.3	Fluorescence	Conformal coating did not fluoresce*	N/A
3.5.4	Fungus Resistance	No fungal growth after 28 days of inoculation	Pass
3.5.5	Flexibility	No cracks were observed on any of the test samples	Pass
3.5.6	Flammability	Met the HB requirements of UL 94	Pass
3.6.1	Dielectric Withstanding Voltage	There was no flashover, sparkover, or breakdown of test specimens	Pass
3.7.1	Moisture and Insulation Resistance	Coating did not have bubbles, pinholes, blisters, cracking, crazing, peeling, wrinkles, mealing, or evidence of reversion, or cause corrosion after moisture and insulation resistance. No flashover, sparkover, or breakdown of test specimens.	Pass
3.7.2	Thermal Shock	The conformal coating was examined with 1.75 X magnification with various light sources. Any referee inspection was carried out with 10X magnification.	Pass
3.7.3	Temperature and Humidity Aging	Tackiness: There was no evidence of tackiness of the conformal coating. Visual: No evidence of softening, chalking, blistering, surface tack, cracking, loss of adhesion, or reversion to the liquid state of the conformal coating. The clarity of the conformal coating remained.	Pass
ASTM B117-07 (modified) and IPC-CC-830B	Salt Fog Exposure	The coated samples offered approximately 100 times greater resistance than the uncoated samples	Pass

*Protect-R-Shield does not use fluorescing agents due to the impact the additive has on LED color.

Measure the Absolute Flux in Lumens

Description
Measure LED light engines before and after conformal coating
Results
Coating lumen loss- Typically between 1.2%-3.8%
Correlated Color Temperature- Average increase of 80K cooler
Color Rendering Index- Insignificant average increase of 1%

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