

HumiSeal 1A27™ Urethane Conformal Coating

Technical Data Sheet

HumiSeal 1A27™ is a single component, polyurethane conformal coating, suitable for general printed circuit board applications. HumiSeal 1A27™ contains no free isocyanates and fluoresces under UV light for inspection purposes. HumiSeal 1A27™ coating is IPC-CC-830 and RoHS Directive 2002/95/EC compliant, and recognized under UL File Number E105698.

Properties of HumiSeal 1A27™

Density, g/cm ³ per ASTM, Meth. D1475	0.96 ± .02
Solids Content, % by weight per Fed-Std-141, Meth. 4044	50 ± 3
Viscosity, centipoise per Fed-Std-141, Meth. 4287	3000 ± 1000
VOC, grams/litre	480
Recommended Coating Thickness, microns	25 – 75
Drying Time to Handle per Fed-Std-141, Meth. 4061	30 minutes
Optional Curing Conditions to Reach Optimum Properties	30 days at RT 30 hours @ 76°C 20 hours @ 88°C
Recommended Thinner (spraying)	HumiSeal Thinner 521
Recommended Stripper	HumiSeal Stripper 1063
Shelf Life at Room Temperature, DOM	24 months
Thermal Shock, 50 cycles per MIL-I-46058C	-65° to 125°C
Coefficient of Thermal Expansion - TMA	170 ppm/°C
Glass Transition Temperature - DSC	28°C
Modulus - DMA	18.1 MPa
Flammability, per UL 94	V-0
Dielectric Withstand Voltage, volts per MIL-I-46058C	>1,500
Dielectric Breakdown Voltage, volts per ASTM, Meth. D149	7500
Dielectric Constant, at 1MHz and 25°C per ASTM-D150-65T	3.6
Dissipation Factor, at 1MHz and 25°C per ASTM-D150-65T	0.02
Insulation Resistance, ohms per MIL-I-46058C	200 x 10 ¹² (200T)
Moisture Insulation Resistance, ohms per MIL-I-46058C	12 x 10 ⁹ (12G)

Application of HumiSeal 1A27™

Cleanliness of the substrate is of extreme importance for the successful application of a conformal coating. Surfaces must be free of moisture, dirt, wax, grease, flux residues and all other contaminants. Contamination under the coating could cause problems that may lead to assembly failures.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal 1A27™ with HumiSeal Thinner 521 in order to obtain a uniform film. Once optimum viscosity is determined, a controlled rate of immersion and withdrawal (5-15 cm/min) will further ensure even deposition of the coating and ultimately a uniform film. During the application, evaporation of solvent causes an increase in viscosity that should be adjusted by adding small amounts of HumiSeal Thinner 521. Viscosity in the dip tank should be checked regularly, using a simple measuring device such as a Zahn or Ford viscosity cup.

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Spraying

HumiSeal 1A27™ can be sprayed using conventional spraying equipment. Spraying should be done in an environment with adequate ventilation so that the vapour and mist are carried away from the operator. The addition of HumiSeal Thinner 521 is necessary to ensure a uniform spray pattern resulting in pinhole-free film. The amount of thinner and spray pressure will depend on the specific type of spray equipment used and operator technique. The recommended ratio of HumiSeal 1A27™ to HumiSeal Thinner 521 is 1:1 by volume, however the ratio may need to be adjusted to obtain a uniform coating.

Brushing

HumiSeal 1A27™ may be applied by brush with a small addition of HumiSeal Thinner 521. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal 1A27™ should be stored away from excessive heat or cold, in tightly closed containers. HumiSeal products may be stored at temperatures of 0 to 35°C. Prior to use, allow the product to equilibrate for 24 hours at a room temperature of 18 to 32°C.

Caution

The solvents in HumiSeal 1A27™ are flammable. Material should not be used in presence of open flame or sparks. Use only in well-ventilated areas to avoid inhalation of vapours or spray. Avoid contact with skin and eyes. Consult MSDS prior to use.

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