

HumiSeal 1A68

Polyurethane Conformal Coating

System Description

A single component, fast air drying polyurethane coating, well suited for general printed circuit board applications. Contains no free isocyanates. Contains fluorescent tracer for visual inspection purposes.

Properties of Liquid HumiSeal

Density, (g/cm ³) per ASTM, Meth. D1475	0.91 ± 0.03
Solids Content, % by weight per Fed-Std-141, Meth.4044	47 ± 1
Viscosity, centipoise per Fed-Std-141, Meth.4287	210-2 30
Flashpoint, per ASTM, Meth. D56	-1

Suggested Cure Cycles (1-3 mil Coating Thickness)

Drying Time to Handle per Fed-Std-141, Meth.4061	15 minutes
Optional curing conditions to reach optimum properties	30 hours at 77°C ±3°
(To resist a 2 minute immersion in 1,1,1-Trichloroethane at 25°C per IPC CC 830, Sect 4.8.9)	or 30 + days at RT
Thinner, if needed (dipping, brushing, spraying)	Thinner 521
Recommended Stripper	Stripper 1063
Pot Life at Room Temperature	18 months
Shelf at Room Temperature	18 months

Properties of Cured HumiSeal

Thermal Properties

Continuous Use Operating Range 0C(0F)	-65°C to +125°C
Thermal Shock, per MIL-I-46058C	Passes
Solderability	Excellent
Coefficient of Thermal Expansion-DMA	193ppm/°C

Physical Properties

Clarity	Transparent
Flexibility, per MIL-I-46058C	Excellent
Adhesion, per ASTM, Meth.D2197	Excellent
Flammability, per ASTM, Meth. D635	Self-Extinguishing
Weather Resistance	Very Good

Electrical Properties

Dielectric Withstand Voltage, volts per MIL-I-46058C	>1,500
Dielectric Breakdown Voltage, volts, per ASTM, Meth. D149	7500
Dielectric Constant, at 1MHz and 250C, per ASTM-D150-65T	3.6
Dissipation Factor, at 1MHz and 250C, per ASTM-D150-65T	0.03
Insulation Resistance, ohms, per MIL-I-46058C	200 x 10 ¹²
Moisture Resistance, ohms, per MIL-I-46058C	16 x 10 ⁹

Chemical Properties

Main Constituent	Polyurethane
Fungus Resistance, per ASTM-G21	Excellent
Resistance to Chemicals	Good

Values are not intended for use in preparation of specifications

APPLICATION

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 and all other contaminants. Contamination under the coating will cause problems which may lead to assembly failures.

HumiSeal coatings may be applied by brush, dip or spray.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal 1A68 with HumiSeal Thinner 521 in order to obtain a uniform film. Once optimum viscosity is determined, a controlled rate of immersion and withdrawal (2 to 6" per minute) will further insure even deposition of the coating and ultimately a uniform film. During the application, evaporation of solvent causes an increase in viscosity, which should be adjusted by adding small amounts of Thinner 521. Viscosity in the dip tank should be regularly checked by the use of a simple measuring device such as a Zahn or Ford viscosity cup.

Spraying

HumiSeal Type 1A68 can be sprayed using conventional spraying equipment. As a rule, the addition of Thinner 521 is necessary to assure 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. The spraying should be done under an exhaust hood so that the vapour and mist are carried away from the operator.

The recommended ratio of HumiSeal type 1A68 to HumiSeal Thinner 521 is 1 to 1 by volume. The quantities may be adjusted to obtain a uniform coating.

Brushing

HumiSeal Type 1A68 may be brushed with a small addition of HumiSeal Thinner 521. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal Type 1A68 should be stored at room temperature, away from excessive heat, in tightly closed containers. HumiSeal products may be stored at temperatures of 5-25°C. Avoid direct sunlight. Prior to use, allow the product to equilibrate for 24 hours at room temperature.

Caution

The solvents in Type 1A68 are flammable. Do not use in presence of open flame or sparks. Avoid inhalation of vapours or spray. Use only in well-ventilated areas. Avoid contact with skin and eyes. If contact occurs, wash with soap and water. If swallowed, call physician immediately. HumiSeal Type 1A68 contains traces of monomeric isocyanate.

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