

HumiSeal 1B31S™ Acrylic Conformal Coating

Technical Data Sheet

HumiSeal 1B31S™ is a fast drying, single component, acrylic conformal coating that provides improved adhesion, excellent moisture and environmental protection for printed circuit assemblies. HumiSeal 1B31S™ demonstrates outstanding flexibility, fluoresces under UV light for ease of inspection and is easily repaired. HumiSeal 1B31S™ coating is MIL-I-46058C qualified, IPC-CC-830 and RoHS Directive 2002/95/EC compliant.

Properties of HumiSeal 1B31S™

Density, g/cm ³ per ASTM, Meth. D1475	0.91 ± .02
Solids Content, % by weight per Fed-Std-141, Meth. 4044	35 ± 3
Viscosity, centipoise per Fed-Std-141, Meth. 4287	200 ± 15
VOC, grams/litre	592
Drying Time to Handle per Fed-Std-141, Meth. 4061	10 minutes
Recommended Coating Thickness, microns	25 - 75
Recommended Curing Conditions	24 hrs @ RT or 30 min @ 76°C
Time Required to Reach Optimum Properties	7 days
Recommended Thinner (dipping & brushing)	HumiSeal Thinner 503
Recommended Thinner (spraying)	HumiSeal Thinner 521
Recommended Stripper	HumiSeal Stripper 1080
Shelf Life at Room Temperature, DOM	24 months
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 125°C
Coefficient of Thermal Expansion - TMA	170 ppm/°C below T _g 340 ppm/°C above T _g
Glass Transition Temperature - DSC	14°C
Modulus - DMA	2000 MPa @ -40°C 1050 MPa @ 20°C 8.5 MPa @ 60°C
Flammability, per UL 94	HB
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	2.5
Dissipation Factor, at 1MHz and 25°C per ASTM-D150-65T	0.01
Insulation Resistance, ohms per MIL-I-46058C	800 x 10 ¹² (800T)
Moisture Insulation Resistance, ohms per MIL-I-46058C	60 x 10 ⁹ (60G)
Fungus Resistance, per ASTM-G21	Passes

Application of HumiSeal 1B31S™

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 1B31S™ with HumiSeal Thinner 503 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 503. 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 1B31S™ 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 1B31S™ to HumiSeal Thinner 521 is 1:1 by volume, however the ratio may need to be adjusted to obtain a uniform coating.

Brushing

HumiSeal 1B31S™ may be brushed with a small addition of HumiSeal Thinner 503. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal 1B31S™ 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 1B31S™ 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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