

## HumiSeal® 1B31EPA Acrylic Conformal Coating Technical Data Sheet

HumiSeal® 1B31EPA is a fast drying, single component, acrylic conformal coating that provides excellent moisture and environmental protection for printed circuit assemblies. 1B31EPA is also produced as pre-blended products, at a range of viscosities, suitable for a variety of applications. The cured film demonstrates exceptional flexibility, fluoresces under UV light for ease of inspection and is easily repaired. HumiSeal® 1B31EPA coating is MIL-I-46058C qualified, IPC-CC-830, RoHS Directive 2011/65/EU and EPA 33/50 compliant.

After complete cure, the properties of HumiSeal® 1B31EPA Pre-Blends and HumiSeal® 1B31EPA are comparable as all solvents evaporate during the drying process.

### Properties specific to HumiSeal® 1B31EPA Pre-blended Products as Supplied

Product	Viscosity (cPs)	Solids (%)	Density (g/cm <sup>3</sup> )	VOC (g/L)	Shelf Life (months)
1B31EPA	325 ± 60	28 ± 3	0.95 ± 0.03	684	24
1B31EPA/600 65CPS	65 ± 5	19 ± 1	0.94 ± 0.01	761	12
1B31EPA/604 PB35 CPS	35 ± 5	15 ± 1	0.925 ± 0.01	786	12

### Properties of HumiSeal® 1B31EPA

Density, per ASTM D1475	0.95 ± 0.03 g/cm <sup>3</sup>
Solids Content, % by weight per Fed-Std-141, Meth. 4044	28 ± 3 %
Viscosity, per Fed-Std-141, Meth. 4287	325 ± 60 centipoise
VOC	684 grams/litre
Drying Time to Handle per Fed-Std-141, Meth. 4061	30 minutes
Recommended Coating Thickness	25 - 75 microns
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 604
Recommended Thinner (spraying)	HumiSeal® Thinner 600
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 <sub>g</sub> 340 ppm/°C above T <sub>g</sub>
Glass Transition Temperature - DSC	14°C
Modulus - DMA	2000 MPa@ -40°C 1050 MPa@ 20°C 8.5 MPa@ 60°C
Flammability, per MIL-I-46058C	Self-Extinguishing
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 volts
Dielectric Breakdown Voltage, per ASTM D149	6300 volts
Dielectric Constant, at 1MHz and 25°C, per ASTM D150-98	2.6
Dissipation Factor, at 1MHz and 25°C, per ASTM D150-98	0.01
Insulation Resistance, per MIL-I-46058C	5.5 x 10 <sup>14</sup> ohms (550TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	7.0 x 10 <sup>10</sup> ohms (70GΩ)
Fungus Resistance, per ASTM G21	Passes

## Application of HumiSeal<sup>®</sup> 1B31EPA

Conformal coatings can be successfully applied to substrates that have been cleaned prior to coating and also to substrates assembled with low residue “no clean” materials. Users should perform adequate testing to confirm compatibility between the conformal coating and their particular assembly materials, process conditions and cleanliness level. Please contact HumiSeal<sup>®</sup> for additional information.

### Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal<sup>®</sup> 1B31EPA with HumiSeal<sup>®</sup> Thinner 600 or 604 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<sup>®</sup> Thinner 600 or 604. Viscosity in the dip tank should be checked regularly using a simple measuring device such as a Zahn or Ford viscosity cup.

### Spraying

HumiSeal<sup>®</sup> 1B31EPA 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<sup>®</sup> Thinner 600 or 604 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<sup>®</sup> 1B31EPA to HumiSeal<sup>®</sup> Thinner 600 or 604 is 1:1 by volume; however the ratio may need to be adjusted to obtain a uniform coating.

### Brushing

HumiSeal<sup>®</sup> 1B31EPA may be brushed with a small addition of HumiSeal<sup>®</sup> Thinner 600 or 604. Uniformity of the film depends on component density and operator's technique.

### Storage

HumiSeal<sup>®</sup> 1B31EPA should be stored away from excessive heat or cold, in tightly closed containers. HumiSeal<sup>®</sup> 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

Application of HumiSeal<sup>®</sup> Conformal Coatings should be carried out in accordance with local and National Health and Safety regulations.

The solvents in HumiSeal<sup>®</sup> Conformal Coatings 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/SDS prior to use

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