1B31S Acrylic Coating

TECHNICAL DATA SHEET

System Description
1B31S is a modified version of 1B31 with improved adhesion to solder masks. 1B31S is a fast air drying, single component, acrylic coating providing excellent moisture and environmental protection for printed circuit assemblies. The final film demonstrates excellent flexibility and is easily repairable. This coating is MIL-I-46058C and IPC-CC-830 qualified. Fluoresces under UV light for ease of inspection. HumiSeal 1B31S is in full compliance with the RoHS Directive (Directive 2002/95/EC).

Properties of Liquid HumiSeal

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific weight, (lb. per gal.) per ASTM, Meth. D1475</td>
<td>7.6 ± .2</td>
</tr>
<tr>
<td>Solids Content, % by weight per Fed-Std-141, Meth.4044</td>
<td>35 ± 3</td>
</tr>
<tr>
<td>Viscosity, centipoise per Fed-Std-141, Meth. 4287</td>
<td>198 ± 13</td>
</tr>
<tr>
<td>Flashpoint, °C (°F) per ASTM, Meth. D56</td>
<td>-1 (30)</td>
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<tr>
<td>VOC (grams / liter)</td>
<td>592</td>
</tr>
<tr>
<td>Drying Time to Handle per Fed-Std-141, Meth.4061</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Recommended Coating Thickness</td>
<td>1 – 3 mils</td>
</tr>
<tr>
<td>Recommended Curing Conditions</td>
<td>24 hrs @ rm. temp or 30 min.@ 170°F</td>
</tr>
<tr>
<td>Time Required to Reach Optimum Properties</td>
<td>7 days</td>
</tr>
<tr>
<td>Thinner, if needed (dipping &amp; brushing)</td>
<td>Thinner 503</td>
</tr>
<tr>
<td>(spraying)</td>
<td>Thinner 521</td>
</tr>
<tr>
<td>Recommended Stripper</td>
<td>Stripper 1080</td>
</tr>
<tr>
<td>Pot Life at Room Temperature</td>
<td>12 months</td>
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<tr>
<td>Shelf Life at Room Temperature</td>
<td>18 months from date of shipment.</td>
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</tbody>
</table>

Properties of Cured HumiSeal

Thermal Properties
- Continuous Use Operating Range °C(°F): -65°C (-85°F) to +125°C (257°F)
- Thermal Shock, per MIL-I-46058C: Passes
- Solderability: Excellent
- Coefficient of Thermal Expansion - DMA: 55ppm / °C
- Glass Transition Temperature - TMA: 14°C
- Young’s Modulus - DMA: 7154 psi

Physical Properties
- Clarity: Transparent
- Build per Dip, mils, per ASTM,Meth.D823: 2
- Flexibility, per MIL-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 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 10¹² (800T)
- Moisture Resistance, ohms, per MIL-I-46058C: 60 x 10⁹ (60G)

Chemical Properties
- Main Constituent: Acrylic
- Fungus Resistance, per ASTM-G21: Passes
- Resistance to Chemicals: Fair

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 that 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 1B31S with HumiSeal Thinner 503 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 that should be adjusted by adding small amounts of Thinner 503. 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 1B31S 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 vapor and mist are carried away from the operator. The recommended ratio of HumiSeal Type 1B31S to HumiSeal Thinner 521 is 1 to 1 by volume, as a starting point. The quantities may be adjusted to obtain a uniform coating.

Brushing
HumiSeal Type 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 Type 1B31S should be stored at room temperature, away from excessive heat, in tightly closed containers. HumiSeal products may be stored at temperatures of 0-100°F. Avoid direct sunlight. Prior to use, allow the product to equilibrate for 24 hours at 65-90°F.

Caution
The solvents in Type 1B31S are flammable. Do not use in presence of open flame or sparks. Avoid inhalation of vapors 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. Refer to MSDS before use.