

## HumiSeal 1C49LV

### Silicone Conformal Coating

#### System Description

A moisture curing, high build, high solids single component silicone coating providing excellent moisture and environmental protection for printed circuit assemblies. Solvent free, 1C49LV has no significant VOC. The final film demonstrates excellent flexibility and is repairable. This coating is qualified to MIL-I-46058C, Type SR and is UL recognized File No. E105698. Fluoresces under UV light for ease of inspection. The coating can be cured at room temperature, or elevated temperature with a pan of water to greatly accelerate the curing.

#### Properties of Liquid HumiSeal

Density, (g/cm <sup>3</sup> ) per ASTM, Meth. D1475	0.96 ± 0.035
Solids Content, % by weight per Fed-Std-141, Meth.4044	95 minimum
Viscosity, centipoise per Fed-Std-141, Meth.4287	550 ± 250
Cure Mechanism	Moisture
Recommended Coating Thickness	2-8 mils
Drying Time to Handle per Fed-Std-141, Meth.4061	1 hour
Recommended Curing Conditions	24 hrs. @RT or 30 min.@ 76-121°C, 60%RH
Place a pan of water in the oven, it will greatly accelerate curing	
Time required to Reach Optimum Properties	7 days
Thinner needed	Thinner 73 or 521
Recommended Stripper	Mechanical removal
Pot Life at Room Temperature	7 days (Purged with dry Ar or N2 Gas)
Shelf at Room Temperature	6 months

#### Properties of Cured HumiSeal

##### Thermal Properties

Continuous Use Operating Range °C	-65 to 200
Thermal Shock, MIL-I-46058C	Passes
Solderability	Fair
Coefficient of Thermal Expansion - DMA	168ppm
Glass Transition Temperature - TMA	79 °C
Young's Modulus - DMA	160psi

##### Physical Properties

Clarity	Transparent
Build per Dip, mils, per ASTM, Meth.D823	5
Flexibility, MIL-I-46058C	Excellent
Adhesion, per ASTM, Meth.D2197	Excellent
Flammability, per ASTM, Meth. D635	Self
Weather Resistance	Very

##### Electrical Properties

Dielectric Withstand Voltage, volts per MIL-I-46058C	>1,500
Dielectric Breakdown Voltage, volts, per ASTM, Meth. D149	7000
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	500 x 10 <sup>12</sup>
Moisture Resistance, ohms, per MIL-I-46058C	100 x 10 <sup>9</sup>

## Chemical Properties

Main Constituent  
Fungus Resistance, per ASTM-G21  
Chemical Resistance

Silicone  
Pass  
Excellent

## 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 1C49LV may be applied by brush, dip, or spray.**

### Brushing

Uniformity of the film depends on component density and operator's technique. 10 to 20% dilution with HumiSeal thinner 521 is beneficial for getting 1C49LV in between and beneath components

### Dipping

Depending on the complexity, density and configuration of the components on the assembly it may be desirable to reduce the viscosity of HumiSeal 1C49LV with HumiSeal thinner 521. A controlled rate of immersion and withdrawal (2" to 6" per minute) will insure even deposition of the coating and ultimately a uniform film. Dip tank viscosity of diluted HumiSeal 1C49LV should be regularly checked using a simple measuring device such as Zahn or Ford viscosity cup. Blanketing dip tanks with dry gas like nitrogen can extend pot life.

### Spraying

HumiSeal 1C49LV may be sprayed using some types of spraying equipment designed for high viscosity coatings. Conventional spray equipment may leave bubbles in cured HumiSeal 1C49LV coatings regardless of the amount of thinner used. When in doubt, test spray equipment before spraying production boards. Spraying should be done under an exhaust hood so that the mist is carried away from the operator.

### Storage

HumiSeal Type 1C49LV should be stored at 5-25°C, away from excessive heat, in tightly closed containers. If coating is partially used, the container should be purged with dry nitrogen prior to resealing. Refrigeration of unused material will significantly extend shelf life. Avoid direct sunlight. Prior to use, allow the product to equilibrate for 24 hours at room temperature.

### Caution

Avoid inhalation of spray. Use only in well-ventilated areas. Avoid contact with skin and eyes. If contact occurs, wash with soap and water. If swallowed, call a physician immediately. Refer to MSDS before use.

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