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HumiSeal®

HumiSeal® 1C49 Silicone Conformal Coating Technical Data Sheet

HumiSeal® 1C49 is a moisture curing, high build, VOC-free silicone conformal coating which provides excellent moisture and environmental protection for printed circuit assemblies. HumiSeal® 1C49 is solvent free. The coating demonstrates outstanding flexibility, fluoresces under UV light for ease of inspection and can be repaired. HumiSeal® 1C49 can be cured at room or at elevated temperatures. HumiSeal® 1C49 is MIL-I-46058C qualified, IPC-CC-830 and RoHS Directive 2011/65/EU compliant, and recognized under UL File Number E105698.

Properties of HumiSeal® 1C49

Density, per ASTM D1475	0.97 ± 0.03 g/cm³
Min Solids Content, % by weight per Fed-Std-141, Meth. 4044	95 %
Viscosity, per Fed-Std-141, Meth. 4287	9000 ± 1500 centipoise
VOC	0 grams/litre
Recommended Coating Thickness	50 - 200 microns
Drying Time to Handle per Fed-Std-141, Meth. 4061	3 - 5 hours
Recommended Curing Conditions	24 hrs @ RT or 20 min @ 76°C*
Time required to Reach Optimum Properties	7 days
Recommended Stripper	HumiSeal® Stripper 1091
Shelf Life at Room Temperature, DOM	12 months
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 200°C
Coefficient of Thermal Expansion - TMA	367 ppm /°C
Glass Transition Temperature - DSC	< -65°C
Storage Modulus - DMA	408 MPa @ -40ºC 1.6 MPa @ 25ºC 1.4 MPa @ 80ºC
Tensile per ASTM D-412	30-50 psi
Elongation per ASTM D-412	80-120 %
Build per Dip, per ASTM D823	5 mils
Flammability, per UL94	V-1
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 volts
Dielectric Breakdown Voltage, per ASTM D149	7000 volts
Dielectric Constant, at 1MHz and 25°C per ASTM D150-98	2.5
Dissipation Factor, at 1MHz and 25°C per ASTM D150-98	0.01
Insulation Resistance, per MIL-I-46058C	5.0×10^{14} ohms (500TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	1.0×10^{10} ohms (10GΩ)
Fungus Resistance, per ASTM G21	Passes

*Place an open pan of water in the oven during curing

Application of HumiSeal® 1C49

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 for additional information.

Brushing
Uniformity of the film depends on component density and operator's technique.

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Dipping
A controlled rate of immersion and withdrawal (5-15 cm/min) will ensure even deposition of the coating and ultimately a uniform film. Blanketing dip tanks with an inert gas such as nitrogen can extend pot life.

Spraying
HumiSeal® 1C49 may be applied using spraying equipment designed for high viscosity coatings. Attempting to apply the material using conventional spray equipment may result in bubbles in the cured HumiSeal® 1C49 coating. When in doubt, test the ability of the spray equipment before applying coating to production boards. Spraying should be done in an environment with adequate ventilation so that the vapour and mist are carried away from the operator. The use of thinner is not required or recommended for HumiSeal® 1C49.

Storage
HumiSeal® 1C49 should be stored at 27°C or below in tightly closed containers away from direct sunlight. If coating is partially used, the container should be purged with dry nitrogen prior to resealing. Prior to use, allow the product to equilibrate for 24 hours at room temperature.

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

Use only in well-ventilated areas to avoid inhalation of vapours or spray. Avoid contact with skin and eyes.

Consult SDS prior to use.

Contact HumiSeal®

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