

HumiSeal® 1C51 Silicone Conformal Coating Technical Data Sheet

HumiSeal® 1C51 is a single component, VOC-free, fast thermal curing silicone conformal coating. The low viscosity and long pot life of HumiSeal® 1C51 make it ideal for dipping and spraying. HumiSeal® 1C51 demonstrates excellent flexibility and contains an optical brightener for inspection under black light. HumiSeal® 1C51 coating is MIL-I-46058C qualified, IPC-CC-830 and RoHS Directive 2002/95/EC compliant and recognized under UL File Number E105698.

Properties of HumiSeal® 1C51

Density, per ASTM D1475	0.99 ± 0.01 g/cm ³
Min. Solids Content, % by weight per Fed-Std-141, Meth. 4044	98 %
Viscosity, per Fed-Std-141, Meth. 4287	630 ± 150 centipoise
VOC	0 grams/litre
Recommended Coating Thickness	50 - 200 microns
Recommended Curing Conditions	10 - 15 minutes @ 105 - 130°C
Time Required to Reach Optimum Properties	15 minutes
Recommended Stripper	HumiSeal® Stripper 1090
Shelf Life at Recommended Conditions, DOM	12 months
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 200°C
Glass Transition Temperature - DSC	< -65°C
Coefficient of Thermal Expansion - TMA	296 ppm/°C
Modulus - DMA	46 MPa @ -40°C 3.9 MPa @ 25°C 3.3 MPa @ 80°C
Flammability, per UL 94	V-0
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	2.4
Dissipation Factor, at 1MHz and 25°C per ASTM D150-98	0.01
Insulation Resistance, per MIL-I-46058C	5.0 x 10 ¹⁴ ohms (500TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	1.0 x 10 ¹⁰ ohms (10GΩ)
Fungus Resistance, per ASTM G21	Passes

Application of HumiSeal® 1C51

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 which may lead to assembly failures.

Dipping

A controlled rate of immersion and withdrawal (5-15 cm/min) will ensure even deposition of the coating and ultimately a uniform film.

Brushing

HumiSeal® 1C51 may be brushed. Uniformity of the film depends on component density and operator's technique.

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Spraying

HumiSeal® 1C51 can be sprayed using conventional spraying equipment. Spray pressure will depend on the specific type of spraying equipment used and operator technique. 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® 1C51.

Curing

HumiSeal® 1C51 is a thermally cured conformal coating. The actual curing temperature of HumiSeal® 1C51 is dependent upon several parameters such as heat sink characteristics of parts being coated, the type of oven used for curing process, as well as oven loading parameters.

The cure mechanism for thermally cured silicones like HumiSeal® 1C51 may be inhibited by a variety of materials i.e.; amines, acrylates, certain ingredients from latex rubber etc. It is recommended that process and material compatibility be considered when incorporating HumiSeal® 1C51 into the production environment. Cotton gloves are recommended for operators who will be handling assemblies prior to coating with HumiSeal® 1C51.

Storage

HumiSeal® 1C51 should be stored at 27°C or below in tightly closed containers away from direct sunlight. Refrigerated storage of HumiSeal® 1C51 will extend its shelf life. 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 MSDS/SDS prior to use.

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