

HumiSeal® 1A20R Urethane Conformal Coating Technical Data Sheet

HumiSeal® 1A20R is a single component, chemically resistant, fast curing polyurethane conformal coating. HumiSeal® 1A20R fluoresces under UV light for ease of inspection. HumiSeal® 1A20R coating is MIL-I-46058C qualified, IPC-CC-830 and RoHS Directive 2002/95/EC compliant.

Properties of HumiSeal® 1A20R

Density, per ASTM D1475	1.02 ± 0.02 g/cm³
Solids Content, % by weight per Fed-Std-141, Meth. 4044	50 ± 3 %
Viscosity, per Fed-Std-141, Meth. 4287	100 ± 30 centipoise
VOC	511 grams/litre
Recommended Coating Thickness	25 - 75 microns
Drying Time to Handle per Fed-Std-141, Meth. 4061	60 minutes
Recommended Curing Conditions	24 hrs @ RT or 3 hrs @ 76°C
Time Required to Reach Optimum Properties	7 days
Thinner, if needed (dipping, brushing, spraying)	HumiSeal® Thinner 521
Recommended Stripper	HumiSeal® Stripper 1072
Shelf Life at Room Temperature, DOM	12 months
Thermal Shock, per MIL-I-46058C	-65°C to 125°C
Coefficient of Thermal Expansion - TMA	515 ppm/°C
Glass Transition Temperature - DSC	71°C
Modulus - DMA	89.6 MPa
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 volts
Dielectric Constant, at 1MHz and 25°C per ASTM D150-98	3.5
Dissipation Factor, at 1MHz and 25°C per ASTM D150-98	0.028
Insulation Resistance, per MIL-I-46058C	3.0×10^{14} ohms (300TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	4.8×10^{10} ohms (48GΩ)
Fungus Resistance, per ASTM G21	Passes
Resistance to Chemicals	Excellent

Application of HumiSeal® 1A20R

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 that may lead to assembly failures. Although its formulation allows HumiSeal® 1A20R to be applied using a wide variety of methods, care should be taken to ensure that it is only applied in an environment where the ambient relative humidity is at 60% or less. Application of the coating when the RH is higher than 60% can cause acceleration of the cure reaction, resulting in bubbles in the dried film.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal® 1A20R with HumiSeal® Thinner 521 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® Thinner 521. Viscosity in the dip tank should be checked regularly, using a simple measuring device such as a Zahn or Ford viscosity cup.

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Spraying

HumiSeal® 1A20R 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® Thinner 521 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® 1A20R to HumiSeal® Thinner 521 is 5:2 by volume; however the ratio may need to be adjusted to obtain a uniform coating.

Brushing

HumiSeal® 1A20R may be brushed with a small addition of HumiSeal® Thinner 521. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal® products may be stored at temperatures of 0 to 35°C. HumiSeal® 1A20R should be stored away from sunlight and excessive heat, in tightly closed containers. If coatings are 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 a room temperature of 18 to 32°C.

Caution

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

The solvents in HumiSeal® 1A20R 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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