HumiSeal 1H2OUR5/S™ Urethane Conformal Coating Technical Data Sheet

HumiSeal 1H2OUR5/S™ is a water-based polyurethane conformal coating, suitable for most spray application methods. The coating contains a UV tracer for ease of inspection. HumiSeal 1H2OUR5/S™ provides excellent moisture insulation resistance and can be chemically removed or soldered through for rework. HumiSeal 1H2OUR5/S™ is IPC-CC-830 and RoHS Directive EU 2002/95/EC compliant.

Properties of HumiSeal 1H2OUR5/S™

Density, g/cm³ per ASTM, Meth. D1475	1.02 ± .03
Solids Content, % by weight per Fed-Std-141, Meth. 4044	34 ± 2
Viscosity, centipoise per Fed-Std-141, Meth. 4287	125 ± 75
Recommended Coating Thickness, microns	25 – 75
Drying Time to Handle per Fed-Std-141, Meth. 4061	60 min
Recommended Curing Conditions	1 hr @ RT and 6 hrs @ 80°C
Time required to Reach Optimum Properties	7 days
Recommended Stripper	HumiSeal Stripper 1072
Shelf Life at Room Temperature, DOM	12 months
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 125°C
Flammability, per UL94	V-0
Dielectric Withstand Voltage, volts per MIL-I-46058C	>1,500
Dielectric Breakdown Voltage, volts per ASTM Meth. D149	6,925
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	2.3×10^{13}
Moisture Insulation Resistance, ohms per MIL-I-46058C	8.2×10^{10}
Fungus Resistance, per ASTM-G21	Passes

Application of HumiSeal 1H2OUR5/S™

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 will cause problems that may lead to assembly failures.

Waterborne coatings should not be placed directly on bare/untreated steel. Applying waterborne coatings when the Relative Humidity is > 80% will adversely affect coating uniformity and can cause poor adhesion.

When HumiSeal 1H2OUR5/S™ is first applied, it has a milky white appearance. As the film dries, the white colour fades until a clear, transparent film remains. The white colour aids the operator's coverage inspection and the colour change serves as an indicator that the coating is dry to the touch. It is recommended that the coating be allowed to reach a tack-free condition before using heat to accelerate the cure process.

Spraying
HumiSeal 1H2OUR5/S™ has been formulated with the optimum levels of additives, to enable the best application performance through a wide variety of spray equipment. Thinning is not recommended. It is important to ensure that the spray equipment has been thoroughly purged of all solvents and previous coatings, prior to the application of water-based products.

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If the equipment has previously been used for solvent based coatings, the following cleaning procedure is recommended.

1. Flush the equipment with solvent thinner until there is no further sign of UV tracer in the output.
2. Flush with IPA or other water miscible solvent.
3. Flush with DI water.
4. Finally, purge with HumiSeal 1H2OUR5/S until the output stream is homogenous.

Hand Spray Equipment:
The equipment settings for spraying are dependent on ambient conditions and equipment design. However, an atomization pressure of around 40-60 psi is recommended. The lower the pressure used, the better chance to ensure bubble free coatings. It is best to keep the nozzle wet when not in use, to prevent coating from curing in the nozzle head. If the gun is to be left unused for more than 15 minutes, make sure that the head is submerged in water.

It is recommended that the coating be applied in four distinct steps. This is achieved by spraying the board from one direction with a side-to-side motion. The board is then rotated 90° and the process repeated, until the board has passed through 360°, thus ensuring optimum edge coverage.

Automated Spray Equipment:
HumiSeal 1H2OUR5/S™ can also be successfully applied using the various types of selective coating equipment available, including Nordson/Asymtek, PVA, Speedline, SCS and Ultrasonic Systems.

Storage
HumiSeal 1H2OUR5/S™ should be stored in its original container in cool, dry conditions. Avoid freezing, since this will compromise performance of the product.

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

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