HumiSeal 1A20

Polyurethane Conformal Coating

System Description

A single component, durable and chemically resistant moisture curing polyurethane coating for printed circuit assemblies. Contains fluorescent tracer to aid inspection under ultraviolet light. Qualified to MIL-I-46058C Type UR. U.L. recognized under the component program of Underwriters Laboratory. File No. E105698.

Properties of Liquid HumiSeal

Density, (g/cm^3) per ASTM, Meth. D1475	1.0 ± 0.02
Solids Content, % by weight per Fed-Std-141, Meth.4044	50 ± 2
Viscosity, centipoise per Fed-Std-141, Meth.4287	85 ± 35
Flashpoint, ^{0}C per ASTM, Meth. D56	28
VOC (/ liter)	510
Recommended Coating Thickness	1 – 3 mils
Drying Time to Handle per Fed-Std-141, Meth.4061	60 minutes
Recommended Curing Conditions	24 hrs @ rm. temp
Accelerated Curing Conditions	3 hrs. @ 76°C (170 F)
Time Required to Reach Optimum Properties	(Place open pan of water in oven during oven curing) 7 days
Thinner, if needed (dipping, brushing, spraying)	Thinner 521
Recommended Stripper	Stripper1071
Pot Life at Room Temperature	>30 days Purging with dry nitrogen when not in use will extend the pot life.
Shelf Life at Room Temperature	6 months

Properties of Cured HumiSeal

Thermal Properties

Continuous Use Operating Range°C	-65°C to +125°C
Thermal Shock,MIL-I-46058C	Passes
Solderability	Excellent
Coefficient of Thermal Expansion - DMA	515ppm /°C
Glass Transition Temperature - TMA	71°C
Young's Modulus -DMA	12994psi

Physical Properties

Clarity	Transparent
Build per Dip, mils, per ASTM,Meth.D823	1-2
Flexibility,MIL-I-46058C	Passes
Adhesion, per ASTM, Meth.D2197	Very good
Flammability, ASTM, Meth. D635	Self-Extinguishing
Weather	Very Good

Electrical Properties

Dielectric Withstand Voltage, volts per MIL-I-46058C	>1,500
Dielectric Breakdown Voltage, volts, per ASTM, Meth. D149	8000
Dielectric Constant, at 1MHz and 25°C, per ASTM-D150-65T	3.5
Dissipation Factor, at 1MHz and 25°C, per ASTM-D150-65T	0.028
Insulation Resistance, ohms, per MIL-I-46058C	300 x 10^{12}
Moisture Resistance, ohms, per MIL-I-46058C	48 x 10^9

Chemical Properties

Main Constituent	Polyurethane
Fungus Resistance, per ASTM-G21	Passes
Resistance to Chemicals	Excellent

1.10.01R2.19.01

Values are not intended for use in preparation of specificat

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 coatings may be applied by brush, dip or spray.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal 1A20 with HumiSeal Thinner 521 in order to obtain a uniform film. Once optimum viscosity is determined, a controlled rate of immersion and withdrawal (2 to 6" per minute) will further insure even deposition of the coating and ultimately a uniform film. During the application, evaporation of solvent causes an increase in viscosity, which should be adjusted by adding small amounts of Thinner 521. Viscosity in the dip tank should be regularly checked by the use of a simple measuring device such as a Zahn or Ford viscosity cup.

Spraying

HumiSeal Type 1A20 can be sprayed using conventional spraying equipment. As a rule, the addition of Thinner 521 is necessary to assure 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. The spraying should be done under an exhaust hood so that the vapor and mist are carried away from the operator. The recommended ratio of HumiSeal Type 1A20 to HumiSeal Thinner 521 is 5 to 2 by volume. The quantities may be adjusted to obtain a uniform coating.

Brushing

HumiSeal Type 1A20 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 Type 1A20 should be stored at room temperature, away from excessive heat, in tightly closed containers. For HumiSeal types 1A20, 1A34, 1C47, 1C49, 1C51, 2A64, and 2B74: if coatings are partially used, the container should be purged with dry nitrogen prior to resealing. HumiSeal products may be stored at temperatures of –18-38°C. Avoid direct sunlight. Prior to use, allow the product to equilibrate for 24 hours at 18-32°C.

Caution

The solvents in Type 1A20 are flammable. Do not use in presence of open flame or sparks. Avoid inhalation of vapors or spray. Use only in well-ventilated areas. Avoid contact with skin and eyes. If contact occurs, wash with soap and water. If swallowed, call physician immediately. HumiSeal Type 1A20 contains traces of monomeric isocyanate. Refer to MSDS before use.

Technical support coatings: Europetechsupport@humiseal.com
Sales: Europeansales@humiseal.com

HumiSeal Europe
Chase Specialty Coatings

Humiseal Europe
2C Albany Park, Frimley Road,
Camberley, Surrey,
GU16 7PH
Phone +44 (0) 1276 691100
Fax +44 (0) 1276 691227
Web: www.humiseal.com