

TECHNICAL DATA SHEET

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. This coating is MIL-I-46058C and IPC-CC-830 qualified. U.L. recognized under the component program of Underwriters Laboratory. File No. E105698. HumiSeal 1A20 is in full compliance with the RoHS Directive (Directive 2002/95/EC).

Properties of Liquid HumiSeal

Specific weight, (lb. per gal.) per ASTM, Meth. D1475	8.4 ± .2
Solids Content, % by weight per Fed-Std-141, Meth.4044	50 ± 2
Viscosity, centipoise per Fed-Std-141, Meth.4287	104 ± 45
Flashpoint, °C (°F) per ASTM, Meth. D56	28 (83)
VOC (grams / liter)	511
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. @ 170°F
(Place open pan of water in oven during oven curing)	
Time Required to Reach Optimum Properties	7 days
Thinner, if needed (dipping, brushing, spraying)	Thinner 521
Recommended Stripper	Stripper 1072
Pot Life at Room Temperature	30 days. Purging container with dry nitrogen when not in use will extend the pot life.
Shelf Life at Room Temperature	6 months from date of shipment.

Properties of Cured HumiSeal

Thermal Properties	
Continuous Use Operating Range °C(°F)	-65°C (-69°F) to +125°C (257°F)
Thermal Shock, per 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, per MIL-I-46058C	Passes
Adhesion, per ASTM, Meth.D2197	Very good
Flammability, per ASTM, Meth. D635	Self-Extinguishing
Weather Resistance	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 (300T)
Moisture Resistance, ohms, per MIL-I-46058C	48 x 10 ⁹ (48G)
Chemical Properties	
Main Constituent	Polyurethane
Fungus Resistance, per ASTM-G21	Passes
Resistance to Chemicals	Excellent



1A20

Polyurethane Coating

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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 that 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 that 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 0-100°F. Avoid direct sunlight. Prior to use, allow the product to equilibrate for 24 hours at 65-90°F.

HumiSeal Type 1A20 is a moisture sensitive coating. Although it's formulation allows Type 1A20 to be applied using a wide variety of methods care should be taken to insure that it is only applied with the ambient relative humidity at 60% or less. Application of the coating when the RH is higher than 60% can cause an acceleration of the cure reaction, which will produce champagne like bubbles in the dried film.

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.

All technical data in this bulletin is based on test results and is believed to be correct. However, since the end use of HumiSeal materials (and the manner of storing and handling them) is beyond our control, we make no warranty-expressed or implied as to the fitness of use, results to be obtained from or effects of use with respect to these materials. Their use shall be solely by the judgment of and at the risk of the user notwithstanding any statement in this bulletin. © Copyright 1992 CHASE CORPORATION.

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