

HumiSeal[®] 1A27 LTX Conformal Coating Technical Data Sheet

HumiSeal[®] 1A27 LTX is a single component, polyurethane conformal coating, suitable for general printed circuit board applications. It is specially formulated with reduced xylene and toluene concentration to be fully compliant with GB30981-2020*. HumiSeal[®] 1A27 LTX contains no free isocyanates.

*Standard GB30981-2020 defines limits on VOCs and solvent usage for Conformal Coatings. Standard GB/T 23990-200 defines the test method for Solvent % analysis.

HumiSeal 1A27 LTX has the following advantages:

- Protection against moisture, corrosive environments and dirt
- Easy application with automated systems
- Low moisture vapor permeability.
- Range of preblends thinners available for different application methods
- Compliant with GB30981-2020

Typical Properties of HumiSeal[®] 1A27 LTX Liquid Coating

Density, per ASTM D1475	0.93 ± 0.02 g/cm ³
Solids Content, % by weight per Fed-Std-141, Meth. 4044	50 ± 3 %
Viscosity, per Fed-Std-141, Meth 4287	1500 to 4000 centipoise
VOC**	480 grams/litre
Drying Time to Handle per Fed-Std-141, Meth. 4061	30 minutes
Recommended Thinner***	HumiSeal [®] Thinner 789, 600
Shelf Life at Room Temperature, DOM	24 Months

Typical Properties of HumiSeal[®] 1A27 LTX Cured Coating

Recommended Coating Thickness	25 - 75 microns
Optional Curing Conditions to Reach Optimum Properties	30 days @ RT 30 hours @ 76°C 20 hours @ 88°C
Recommended Stripper	HumiSeal [®] Stripper 1063
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 125°C
Coefficient of Thermal Expansion - TMA	170 ppm/°C
Glass Transition Temperature - DSC	28°C
Modulus - DMA	18.1 MPa
Flammability, per UL 94	V-0
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 volts
Dielectric Breakdown Voltage, per ASTM D149	7500 volts
Dielectric Constant, at 1MHz and 25°C per ASTM D150-98	3.6
Dissipation Factor, at 1MHz and 25°C, per ASTM D150-98	0.02
Insulation Resistance, per MIL-I-46058C	2.0 x 10 ¹⁴ ohms (200TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	1.2 x 10 ¹⁰ ohms (12GΩ)

** Conformal coatings are exempt from VOC restrictions as defined in GB30981-2020

*** Other Coating to Thinner combinations may be successful. Please refer to the HumiSeal Coating to Thinner Compatibility Matrix for guidance on compatibility for dipping, brushing, spraying and cleaning.

Typical Application of HumiSeal[®] 1A27 LTX

Conformal coatings can be successfully applied to substrates that have been cleaned prior to coating and also to substrates assembled with low residue, “no clean” assembly materials. Users should perform adequate testing to confirm compatibility between the conformal coating and their particular assembly materials, process conditions and cleanliness level. Please contact HumiSeal for additional information.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal[®] 1A27 LTX with HumiSeal[®] Thinner 789 or Thinner 600 in order to obtain a uniform film. Once optimum viscosity is determined, a controlled rate of immersion and withdrawal (5-15 cm/min) should 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 789 or Thinner 600. Viscosity in the dip tank should be checked regularly, using a simple measuring device such as a Zahn or Ford viscosity cup.

Spraying

HumiSeal[®] 1A27 LTX 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 789 or Thinner 600 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.

Brushing

HumiSeal[®] 1A27 may be applied by brush with a small addition of HumiSeal Thinner 789 or Thinner 600. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal[®] 1A27 LTX should be stored away from excessive heat or cold, in tightly closed containers. HumiSeal[®] products may be stored at temperatures of 0 to 35°C. 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[®] Conformal Coatings 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 SDS prior to use.

Contact HumiSeal[®]

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