

HumiSeal® UV80LED

Dual Curable Conformal Coating

HumiSeal® UV80LED is a high solids, UV curable, urethane acrylate conformal coating. This material has been formulated at a low viscosity suitable for application using selective coating equipment and can be cured by LED UV systems to give a tack free coating

HumiSeal® UV80LED has been specifically developed to:

- Be low viscosity suitable for film coater application without need for pre-heating
- Have excellent adhesion.
- Have excellent moisture resistance.
- Fluorescence under UV light to allow coating inspection.
- Be cured tack-free using a 395nm LED lamp system
- Have a secondary cure mechanism that will fully cure any unexposed areas of the coating within 7 days at ambient conditions to give a transparent solid
- Be fungus resistant.

HumiSeal® UV80LED meets the following standards:

- IPC-CC-830
- Compliant with RoHS Directive EU 2015/863
- Compliant with China RoHS 2
- Compliant to China Standard GB30981-202
- Contains no SVHCs to EU REACH 1907 Directive
- UL 94V-0

Properties of HumiSeal® UV80LED Liquid Coating

Minimum Solids Content, % by weight	98 %
Viscosity, at 25°C	50 to 100 Centipoise
Shelf Life at Room Temperature, DOM	12 Months
Recommended UV or LED Cure	See Curing Below

Properties of HumiSeal® UV80LED Cured Coating

Coating Thickness, as recommended by IPC guidelines	25 - 125 microns
Coating Thickness, as recommended for application	30 – 130 microns
Time to reach optimum properties	7 days after UV cure
Operating temperature range	-65°C to 150°C
Thermal Shock, per IPC-TM-650 2.6.7.1, Class 3	-65°C to 125°C
Glass Transition Temperature - DSC	45°C
Coefficient of Thermal Expansion - TMA	66.41 ppm/°C below T _g 192.65 ppm/°C above T _g
Modulus (DMA) at 25°C	54.42 MPa
Dielectric Withstand Voltage (Per MIL-I-46058C)	>1500V
Moisture Insulation Resistance (Per IPC CC830 Rev C)	Pass
Surface Insulation Resistance (per IPC J-STD-004 (mod.))	10.5 log Ohms
Flammability, per UL-94	V-0
Dielectric Strength	60kV/mm
Volume Resistivity	1 x 10 ¹⁴ Ohms / cm

Application of HumiSeal® UV80LED

A minimum temperature of 16°C and 50% Relative Humidity is recommended for application.

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.

Spraying

HumiSeal® UV80LED can be applied via standard selective coating equipment or by conventional hand spray equipment. The air source used for spraying must be dry (a dry air supply or dry inert gas (nitrogen or argon) is highly recommended) to prevent premature curing of the secondary cure mechanism. The spraying should be done with adequate ventilation so that the vapor and mist are carried away from the operator.

Brushing

HumiSeal® UV80LED may be applied by brush for rework or touch up only. Brush must be cleaned with solvent promptly after use.

Curing

HumiSeal® UV80LED is a highly crosslinked coating. To achieve maximum crosslinking density, the product must be exposed to the correct spectral output. HumiSeal has modelled the performance of UV80LED using LED Lamp units lamp units. A minimum dose of 3 J/cm² is recommended using a 395nm LED Light.

Due to the effects of oxygen inhibition, there may be a slight residual tack immediately after cure however, this disappears after a short period of time. The cure recommendations may change as curing technology develops.

Heat is also an important component with UV cure, and different systems produce different heat outputs. Higher heat levels allow UV cure at lower dose/irradiance levels. Consequently, HumiSeal recommend that curing is discussed with HumiSeal® Technical staff to ensure the exact customer process being used will meet the coating cure requirements.

HumiSeal® UV80LED contains a reliable secondary moisture cure mechanism which will cure any shadow areas on the assembly within 7 days at ambient moisture. It is recommended that the relative humidity is above 50% to enable the secondary cure mechanism to take place.

Clean Up

To flush equipment and clean uncured HumiSeal® UV80LED, non-alcohol-based solvents should be used. HumiSeal® Thinner 521, Thinner 521EU or Thinner 73 are recommended.

Rework

HumiSeal® UV80LED is a highly crosslinked UV cured coating. The cured film has a high degree of environmental and chemical resistance and will be more difficult to remove than traditional conformal coatings. Thermal displacement and mechanical abrasion are suitable options for rework of HumiSeal® UV80LED.

Storage

HumiSeal® UV80LED is photosensitive. The product should not be exposed to direct sunlight or full spectrum fluorescent lighting. HumiSeal® UV80LED should be stored between 5 to 30°C, to maximize shelf life. Temporary storage at 40C, for example during transport, should not deteriorate the stability of the material.

Prior to use, allow the product to equilibrate for 24 hours at room temperature. HumiSeal® UV80LED is a moisture curing material and care should be taken to protect process vessels and partial containers from moisture.

Partial containers must be purged with a dry, inert gas such as dry air, nitrogen or argon before closure, otherwise premature polymerization by atmospheric moisture will occur.

Caution

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