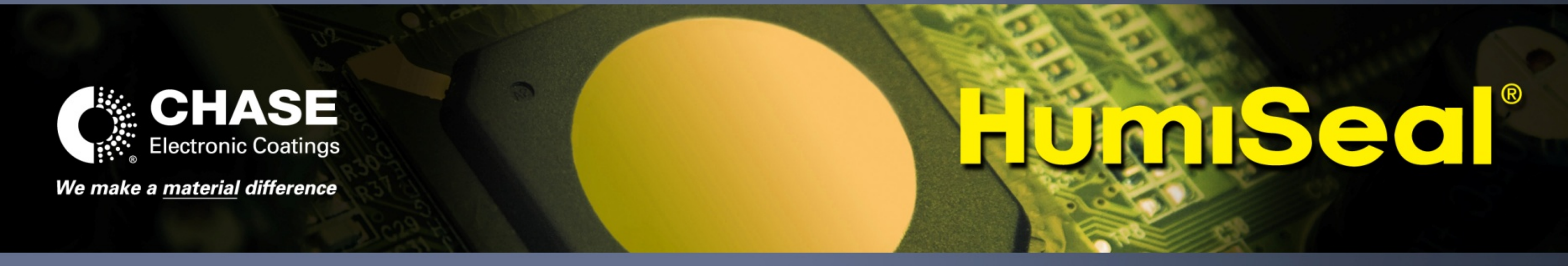

HumiSeal® UV40 LED UV Curable Conformal Coating Technical Data Sheet*

HumiSeal® UV40 LED coating is one-part, high solids, dual-cure acrylated polyurethane conformal coating possessing LED cure capability. LED cure technology benefits from having lower energy consumption, reduced temperatures, no ozone or UV-C generation and increased equipment lifetime. HumiSeal® UV40 LED has been developed to have the following characteristics:

- Tack free cure with LED UV light at 385nm or 395nm as well as microwave light source.
- Application possible at elevated temperatures to give increased process stability and reduced applicator pressure.
- Secondary cure mechanism that will fully cure any unexposed areas of the coating within 7 days at ambient conditions**
- Fluoresce under UV light to allow coating inspection and can be applied by all selective coating equipment.
- Excellent chemical and moisture resistance.

* This technical data sheet contains provisional data which may be revised.
**At higher temperature or humidity levels, this time may be reduced
HumiSeal® UV40 LED coating is compliant with IPC-CC-830 testing, RoHS Directive 2015/863/EU and China standard GB30981-2020. HumiSeal® UV40 LED coating does not contain no VOCs or solvent.

Typical Properties of HumiSeal® UV40 LED

Density	1.05 ± 0.05 g/cm^3
Minimum Solids Content	95 %
Viscosity, per Fed-Std-141, Meth. 4287	650 ± 150 centipoise
Recommended Coating Thickness	25 - 125 microns
Recommended UV Cure*	See curing section below
Shelf Life at Room Temperature, DOM	12 months
Recommended Stripper**	HumiSeal® Stripper 1100
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 125°C
Glass Transition Temperature - DSC	-2.4°C
Coefficient of Thermal Expansion - TMA	21 ppm/°C Below T_g 116 ppm/°C Above T_g
Modulus - DMA	784 MPa @ -40ºC 29.5 MPa @ 25ºC 2.25 MPa @ 80ºC
Flammability, per UL-94	Pending
Shore Hardness, Shore D	35
GB30981-2020	Compliant
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 volts
Insulation Resistance, per MIL-I-46058C	5.0 x 10^{14} ohms (500TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	6.0 x 10^{10} ohms (60 GΩ)
Surface Insulation Resistance, per IPC-J-STD-004 (mod.)	8.78 $\log_{10}$ Ohms
Resistance to Chemicals	Excellent

**Stripper 1100 is not available in the EU

Application of HumiSeal® UV40 LED

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® UV40 LED can be applied via standard selective coating equipment or by conventional hand spray equipment. The source air used for spraying must be dry (a dry inert gas 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® UV40 LED may be applied by brush for rework or touch up only. Brush must be cleaned with solvent promptly after use.

Curing

HumiSeal® UV40 LED is a highly crosslinked coating. In order to achieve maximum crosslinking density, the product must be exposed to the correct spectral output. Lamp units >8w/cm2 at 385nm (14 W) or 395nm (12W) have been demonstrated to be sufficient. Conveyor speed and lamp height have an influence on coating cure level. Users should perform adequate testing to ensure appropriate cure with their selected equipment set. HumiSeal® UV40 LED is capable of being cured using a microwave UV oven equipped with an “H” style bulb. It is recommended that you contact HumiSeal Technical Support to discuss your equipment and process in detail.

Clean Up

To flush equipment and clean uncured HumiSeal® UV40, non-alcohol based solvents should be used. HumiSeal® Thinner 521 or Thinner 521EU is recommended.

Rework

HumiSeal® UV40 LED 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, mechanical abrasion and, where available, HumiSeal® Stripper 1100 are suitable options for rework of HumiSeal® UV40 LED.

Storage

HumiSeal® UV40 LED is photosensitive. The product should not be exposed to direct sunlight or full spectrum fluorescent lighting. HumiSeal® UV40 LED should be stored away from excessive heat, in tightly closed opaque containers at 0 to 25°C to ensure maximum shelf life is achieved. Prior to use, allow the product to equilibrate for 24 hours at room temperature. HumiSeal® UV40 LED 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.

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