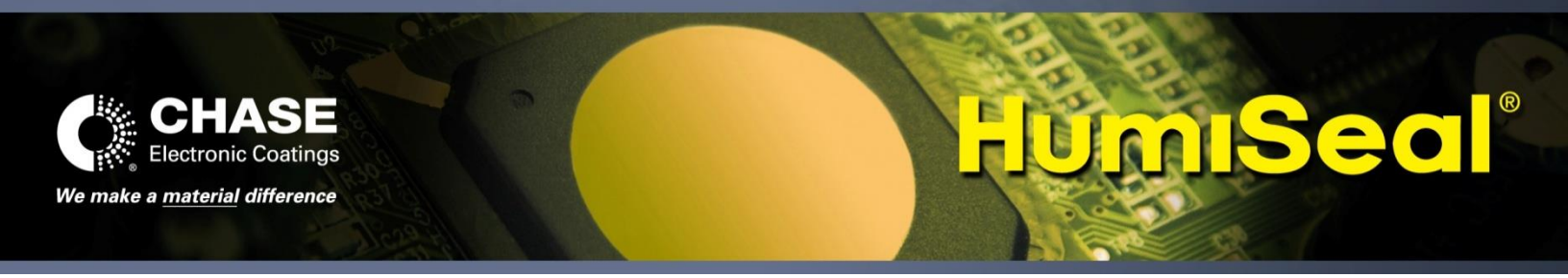

HumiSeal® UV50LV

UV Curable Conformal Coating Technical Data Sheet

HumiSeal® UV50LV is a one-part, low viscosity, high solids dual cure acrylated polyurethane conformal coating possessing excellent chemical resistance, flexibility and moisture resistance. HumiSeal® UV50LV has been developed at a low viscosity to allow use with film coater type selective coating equipment. HumiSeal® UV50LV is tack free after exposure to UV light and the secondary moisture cure mechanism will fully cure any unexposed areas of the coating within 7 days at ambient conditions. Cured HumiSeal® UV50LV has a higher flexibility compared to other UV curable conformal coatings, giving improved performance in thermal cycling tests. HumiSeal® UV50LV fluoresces under UV light to allow coating inspection and can be applied by all selective coating equipment. HumiSeal® UV50LV contains no VOCs or solvent.

Typical Properties of HumiSeal® UV50LV

Density	1.0 to 1.1 g/cm^3
Minimum Solids Content	95 %
Viscosity, per Fed-Std-141, Meth. 4287	80 - 120 centipoise
Recommended Coating Thickness	25 - 125 microns
Recommended UV Cure*	See Curing Below
Shelf Life at Room Temperature, from DOM	12 months
Glass Transition Temperature - DSC	-1°C
Coefficient of Thermal Expansion - TMA	122 ppm/°C Below T_g 264 ppm/°C Above T_g
Modulus - DMA	6.394 MPa @ 25ºC
Flammability, per UL-94	V-0
Dielectric Withstand Voltage, per MIL-I-46058C	> 1500 V
Surface Insulation Resistance, per IPC-J-STD-004 (mod.)	8.61 $\log_{10}$ ohms
Surface resistivity (ASTM D-257)	7.4 X 10^{14} Ohm
Volume resistivity (ASTM D-257)	3.9 X 10^{13} Ohm X cm
Moisture Insulation Resistance (IPC-CC-830)	3.0 X 10^9 Ohm
SIR 85C/85RH (7 days, IPC B24)	Pass >500MΩ
CTI (ASTM D-3638)	PLC=0 (600V)
Resistance to Chemicals	Excellent

*Microwave UV cure ovens equipped with “H” style bulbs recommended

Application of HumiSeal® UV50LV

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® UV50LV 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 (air, 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 vapour and mist are carried away from the operator.

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Brushing
HumiSeal® UV50LV may be applied by brush for rework or touch up only. Brushes should be cleaned with solvent promptly after use.

Curing
HumiSeal® UV50LV is a highly cross linked coating. In order to achieve proper UV curing the product must be exposed to the correct spectral output. Humiseal has modelled the performance of UV50LV using Arc and Microwave UV curing equipment. The table below outlines the required dosage and irradiance values necessary to render HumiSeal® UV50LV tack free after UV exposure with both equipment types. Minimum figures should provide a tack free surface. The maximum recommendation represents highest tested values by Humiseal. The cure recommendations may change as curing technology develops.

		Dose J/cm2*			Irradiance W/cm2*		
		UVA	UVB	UVC	UVA	UVB	UVC
Min	Arc System	1.80	1.70	0.50	0.50	0.50	0.10
Min	Microwave System	0.70	0.70	0.15	0.70	0.70	0.15
Max	Arc System	3.10	2.90	0.80	0.90	0.90	0.20
Max	Microwave System	3.00	3.00	0.60	1.20	1.20	0.2

*Values measured with a Powerpuck Model II UV radiometer.

HumiSeal® UV50LV was designed to be cured using a UV oven equipped with a mercury doped bulb. Care must be taken during the equipment selection process to ensure minimum dosage and irradiance values obtained will properly cure the coating. Because of the variations possible in curing equipment type and configuration, it is strongly recommended that you contact HumiSeal Technical Support to discuss your equipment and process in detail.

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, it is recommended that curing is discussed with HumiSeal® Technical Support to ensure the exact customer process being used will meet the cure requirements. After UV exposure and return to room temperature, the coating should be tack free.

HumiSeal® UV50LV contains a reliable secondary moisture cure mechanism which will cure any shadow areas on the assembly within 7 days at ambient moisture.

Clean Up
To flush equipment and clean uncured HumiSeal® UV50LV, non-alcohol based solvents should be used. HumiSeal® Thinner 521 is recommended.

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Rework

HumiSeal® UV50LV is a highly cross linked 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® UV50LV.

Storage

HumiSeal® UV50LV is photosensitive. The product should not be exposed to direct sunlight or full spectrum fluorescent lighting. HumiSeal® UV50LV 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® UV50LV 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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