ELECTROLUBE
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UVCL
UV Cure Conformal Coating

UVCL is a low viscosity, single-part conformal coating, which cures rapidly on exposure to the correct dose of UV light. UVCL has a highly effective, moisture initiated secondary cure mechanism to ensure curing in shadowed areas. It has been specifically designed to offer the highest level of protection for electronic circuitry at high production throughputs. UVCL has been designed for application via selective spray equipment and demonstrates ease of application in an automated process, along with excellent storage stability and shelf-life. UVCL is the next generation VOC-free coating.

- Dual cure system; secondary moisture cure for full cure, even in shadow areas
- Eliminates the use of solvents; VOC-free and non-flammable coating
- No dilution required; low viscosity, ready to use for selective spray application
- Ultimate protection in harsh environments, including high humidity, corrosive and chemical atmospheres

Approvals	**RoHS Compliant (2015/863/EU):**	**Yes**
	IPC-CC-830:	**Meets Requirements**
	IEC-61086:	**Meets Requirements**
	UL746-QMJU2:	**Approved: File Number E138403**
Liquid Properties	Appearance:	Pale Coloured Liquid
	Base material:	Urethane acrylate
	Density @ 20°C (g/ml):	1.1
	Solids Content:	100%
	VOC content:	0%
	Flash Point:	>90°C
	Viscosity @ 20°C (mPa s):	225-325
	Coverage @ 100µm:	$10m^2$/litre
Dry Film Coating	Colour:	Colourless
	Operating Temperature Range:	-65°C to +135°C
	Surface Insulation Resistance:	$1 \times 10^{15}\Omega$
	Dielectric Strength:	27 kV/mm
	Dielectric Constant @ 1MHz:	2.5
	Dissipation Factor @ 1MHz, 25°C:	0.01
	Flammability:	UL94 V-0
	Moisture Resistance (IPC-CC-830):	$7 \times 10^{12}\Omega$
	Thermal Shock:	
	IPC-CC-830 (-65°C to +125°C):	Pass 100 Cycles
	Additional (-40°C to +125°C):	Pass >1000 Cycles
	Glass Transition Temperature, Tg	1-4 °C
	Elastic Modulus (-40°C)	550 MPa
	(25°C)	24-32
	(125°C)	2-4

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Electrolube cannot be held responsible for the performance of its products within any application determined by the customer, who must satisfy themselves as to the suitability of the product.

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Packaging*	Description	Order Code	Shelf Life
UVCL UV Cure Coating	4 Litre Bulk	EUVCL04LE	12 Months
Industrial Machine Cleaner	5 Litre Bulk	IMC05L	36 months

*Other packaging sizes may be available upon request.

Directions for Use

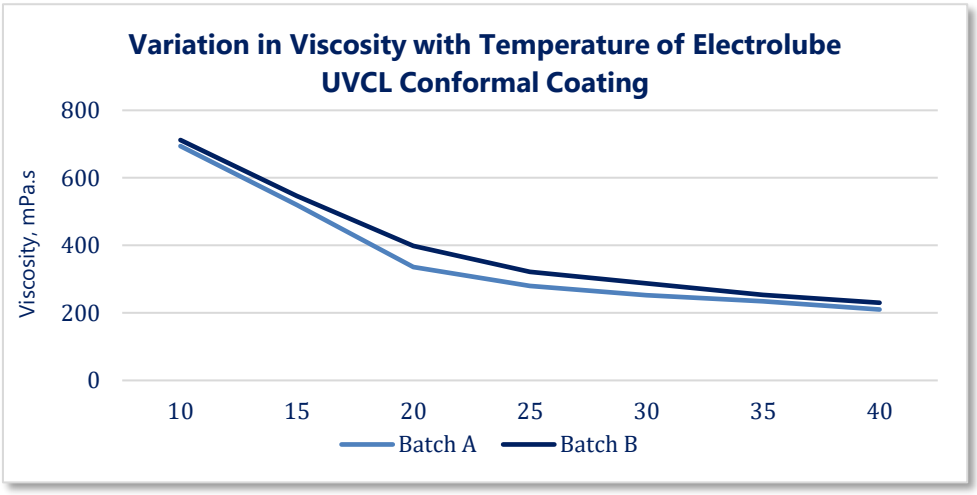
Substrates should be thoroughly cleaned before coating to ensure satisfactory adhesion to the substrate. All flux residues should be removed as they may become corrosive or interfere with adhesion if left on the PCB. Electrolube manufacture a range of cleaning products using both hydrocarbon solvent and aqueous technology.

UVCL has been specifically designed for automated processes using selective spray technology however other spraying techniques and touch-up application via brush may also be employed. The coating application must be done away from the UV light source to prevent premature curing.

Spraying – Bulk

UVCL is supplied in a ready to use viscosity for selective spraying. Due to the secondary moisture cure it is advised that all storage tanks are kept sealed from moisture during use to allow a longer pot life. Nozzles and applicator heads should be immersed in machine cleaner when not in use.

Depending on the spray equipment and parameters used, UVCL can be applied in a range of thicknesses; the exact thickness should be determined for each application however a minimum of 100 microns and maximum of 200 microns are advised. Heating jackets can be applied to the storage tanks to reduce the coating viscosity further and are advised to ensure a stable viscosity is achieved particularly in environments where the operating temperature is changeable. Please see below graph for further information.



Brushing

As it is a manual process with many variables, brush coating is only advised for touch-up applications. Brushes should be clean and dry prior to use and exposure to UV light minimised to avoid premature curing.

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Curing

The speed of UV cure depends on UV intensity, wavelength, applied coating thickness and height of components. The material will be touch-dry and can be moved further in production once the coating has seen the correct dose of UV light. Coating in shadow areas that does not receive the full UV dose will cure by the secondary moisture cure mechanism. The time for full cure depends on the thickness of the coating, humidity and temperature.

It is essential that the correct UV exposure is determined for each board, prior to any production, and it is recommended that a radiometer is used to ensure the dose is consistent. UVCL has been designed to achieve optimum cured film properties through a simple application process. As such, UVCL utilises a combination of wavelengths, with the majority dose of UVA, the most common form of UV light.

UVCL has been designed to cure using standard 'H' or 'H+' type bulbs, with UV irradiance and doses in the range:

	Irradiance (W/cm^2)			Dose (J/cm^2)		
	UVA	**UVB**	**UVC**	**UVA**	**UVB**	**UVC**
Min	0.6	0.6	0.15	1.5	1.5	0.5
Max	0.8	0.8	0.25	3.0	3.0	0.8

The UV doses above refer to parameters measured with an EIT UV Power Puck.

Further information on the application and curing of UVCL is available on request.

Inspection

UVCL contains a fluorescent dye, which allows 'blacklight' inspection of the PCB after coating, to ensure complete and uniform coverage. The stronger the reflected UV light, the thicker the coating layer is. UV light in the region of 375nm should be used for inspection.

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