

UVCL_FC

Fast Curing UV Cure Conformal Coating

UVCL_FC is a low viscosity, single-part conformal coating, which cures rapidly on exposure to the correct dose of UV light. It has been specifically designed to offer the highest level of protection for electronic circuitry at high production throughputs. UVCL_FC gives ultimate protection in harsh environments due to excellent moisture, yellowing and chemical resistance.

- Fast curing, low curing energy required; suitable for various types of UV lamps
- Eliminates the use of solvents; non-flammable coating; economic and environmentally friendly
- No dilution required; low viscosity, suitable for a range of spraying applications including film spraying
- Strong adhesion to a wide variety of substrates as well as excellent dielectric and insulative properties

Approvals	RoHS-2 Compliant (2015/863/EU): IPC-CC-830: IEC-61086: UL746-QMJU2:	Yes Meets Requirements Meets Requirements Meets Requirements
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Liquid Properties	Appearance: Base material: Density @ 20°C (g/ml): Viscosity @ 20°C (mPa s): Solids Content (%):	Faint Yellow Liquid Urethane acrylate 1.1 ± 0.05 110 ± 40 >99
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Dry Film Coating	Colour: Operating Temperature Range: Hardness (Pencil) Surface Insulation Resistance Flammability: Thermal Cycling (IPC-CC-830)	Colourless -65°C to +135°C ≥ HB 1.0 x 10 ¹⁴ Ω Self-extinguishing Pass 100 Cycles
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Packaging*	Description	Order Code	Shelf Life
UVCL-FC UV Cure Coating	5 Litre Bulk	EUVCL-FC05L	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_FC is suitable for multiple of processes such as spraying and brushing; especially for film curtain spraying. To obtain good surface coverage, it is important to allow sufficient flow levelling time. Allow the coating to level in

the air for 5 minutes after spraying or brushing – this may be modified depending on the equipment/process used. Expose under 365nm wavelength of UV light, distance between light source and adhesive layer, curing depth or clearance of layer, and light penetrability of substrate all need to be considered. Close containers instantly after use and if possible flush the head space with dry nitrogen. Dispense UV Cure Coatings away from light.

Spraying – Bulk

UVCL_FC is supplied in a ready to use viscosity for selective spraying, especially for curtain/film spraying processes. 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 (IMC) when not in use and it is advised that the nozzles are cleaned frequently. It is also advised that machines are flushed through with a suitable machine cleaner before and after the use of UVCL_FC; water and alcohol based cleaners should not be used. Depending on the spray equipment and parameters used, UVCL_FC can be applied in a range of thicknesses; the exact thickness should be determined for each application, however as a guide, a minimum of 75 microns and a maximum of 200 microns are advised.

Brushing

Ensure that the coating material has been allowed to settle for at least 1 hour before applying. The coating should be kept at ambient temperature. 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.

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 and can take between 7 – 14 days.

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_FC has been designed to achieve optimum cured film properties through a simple application process. As such, UVCL_FC utilises a combination of wavelengths, with the majority dose of UVA, the most common form of UV light. When using standard 'H' or 'H+' type bulbs, running at 40% power with a conveyor speed of 1m/min, UV irradiance and doses are 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_FC, including curing using UV LED light, is available on request.

Inspection

UVCL_FC 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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