5TECHNICAL DATASHEET

UVP33 December 2024

Urethane Permanent Conformal Coating

PRODUCT DESCRIPTION

UVP33 is a transparent single component designed to protect printed circuit boards subjected to harsh environments. It is a very strong adhesion and doesn't contain isocyanate or CMR solvents. UVP33 is a permanent coating.

UVP33 may be applied by dipping, brushing, spraying machine and of course selective coating machine which is the ideal way to apply (DS65).

UVP33 is compliance with REACH and ROHS regulations.

FEATURES

- Excellent adhesion in harsh weather conditions,
- Very soft conformal coating, no stress on component
- Fluorescent UV to control of the layer of conformal coating deposit,
- Operating temperature range -65°C to + 125°C,
- Can be soldered through without fear of highly toxic gases being produced,
- Excellent dielectric properties,
- Very fast curing at room temperature,
- Ready-to-use version for selective dispensing machine (UVP33 DS65),
- Meets UL qualification (IPC-CC-830 et MIL-I-46058C).

APPLICATION

UVP33 can be sprayed, dipped or brushed. The thickness of the coating depends on the method of application, but a dip coater normally deposits a film thickness of about 25 microns (single coat). Workshop temperatures of less than 16°C or relative humidities in excess of 75% are unsuitable for the application of UVP33.

UVP33 contains a UV trace which allows inspection of the PCB after coating to ensure complete and even coverage. The stonger the reflected light, the thicker the coating layer is.

Before use, make sure that the varnish has been well shaken and then "rested" for at least 2 hours, to give bubbles time to burst. The varnish should be stored at room temperature.

Before coating, PCBAs should be clean, dry and without moisture. The CI, being composite materials, absorb moisture. It is important to remove it before coating. A passage in oven for 3 to 4 hours at 60°C is generally sufficient.

After a soldering process, PCBAs can be coat immediately. If there is an intermediate storage up to 48 hours you will have to dry PCBAs.

Cleaning before coating

PCBs must be free of moisture and perfectly clean (no dust, grease, wax…). Adhesion of the coatings is depending. All traces of flux are eliminated because they can become corrosive and create malfunction of the circuit.

UVP33 can be applied on uncleaned PCBAs. A cross cut test may to do to check the good adhesion on the PCBAs.

Cleaning will increase adhesion on the substrat. ABchimie manufacture a range of 100% Ozone Friendly cleaning products in both the hydrocarbon solvent and aqueous fields. All products produce results within the Military specification (<1.56mg NaCL/cm2). Please contact ABchimie for further information.

Dipping

Ensure that the coating material in the container has been agitated thoroughly and has been allowed to stand for at least 2 hours for all the air bubbles to disperse.

Thinners (DVU) should be used to keep the UVP33 coating at a suitable viscosity for dipping. DVU is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup" (Zahn 3).

The board assemblies should be immersed in the UVP33 dipping tank in the vertical position, or at an angle as close to the vertical as possible. Connectors should not be immersed in the liquid unless they are very carefully masked. ABchimie Peelable Coating Mask (LDM) is ideal for this application.

Leave submerged for about 1 minute until the air bubbles have dispersed. The board or boards should then be withdrawn VERY SLOWLY (5 to 20 cm/mn) so that an even film covers the surface. After withdrawing, the boards should be left to drain over the tank until the majority of residual coating has left the surface.

After the draining operation is complete, the boards should be placed in an air-circulating drying cabinet and left to dry.

Spraying

Bulk UVP33 needs to be thinned with DVS before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions but a starting point could be 1 parts coating to 1 part thinners. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed.

UVP33 is suitable both for use in manual spray guns and computer controlled airless spray equipment that only coats the required areas of the PCB, eliminating the need for masking.

The nozzle of the spray gun requires to be selected to give an even spray to suit the prevailing viscosity of the coating material.

To ensure penetration of the coating beneath the components and in confined spaces, spray the assembly from all directions to give an even coating.

After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.

Brushing

Ensure that the coating material has been agitated thoroughly and has been allowed to settle for at least 2 hours. The coating should be kept at ambient temperature. Gently apply the coating with a good quality brush (silk) so as not to leave brush marks and so that the components and wiring are not disturbed.

When the brushing operation is complete the boards should be placed in an air-circulating drying cabinet and left to dry.

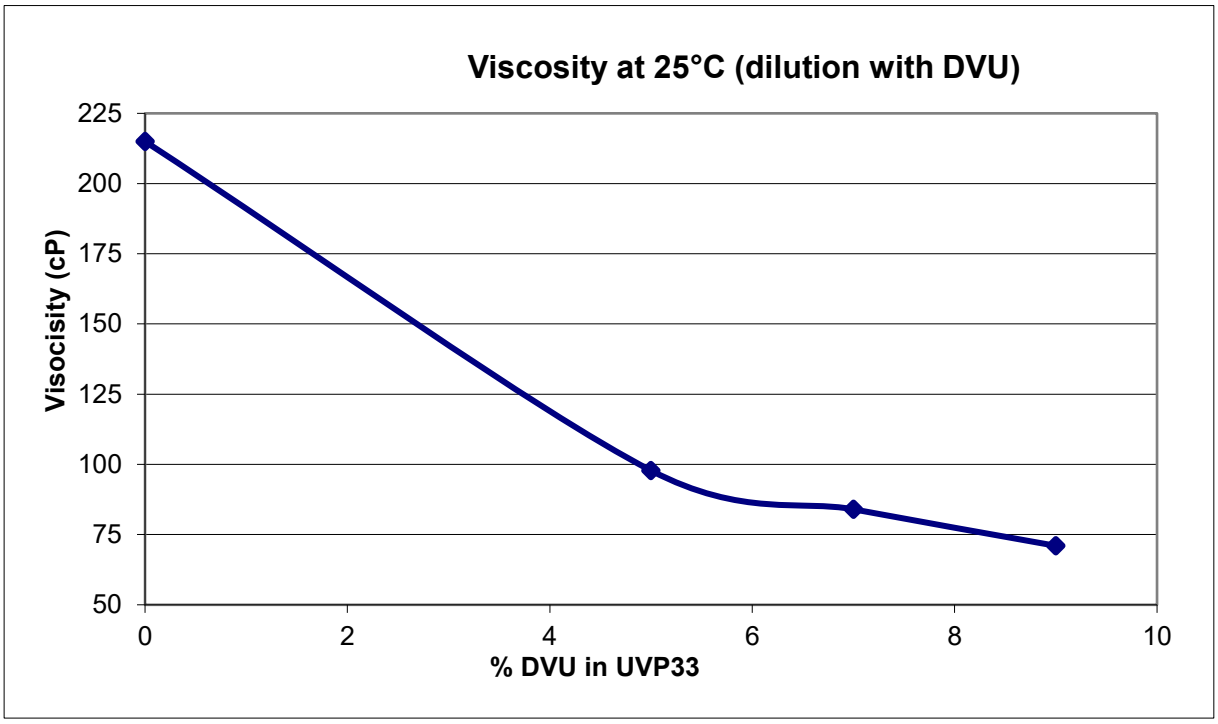
Drying Times and Curing Conditions

UVP33 will be touch dry after 30 minutes at room temperature and does not require a thermal cure. The full properties of UVP33 will be obtained after a 24 hours at room temperature.

Immediate adhesion can be accelerated by the use of a thermal cure of 2 hours at 50°C. However solvants must be evaporated before heating.

Optimal properties of UVP33 varnish are achieved after 24 hours at 80°C, or one month at room temperature.

Dilution- with DVU (solvent)



TYPICAL PROPERTIES

Liquid UVP33

Colour:	Pale coloured liquid
Non-volatile content:	44%
Viscosity @ 25°C:	150 - 250 cSt (Bulk)
Specific Gravity @ 20°C:	0.88
Drying Time:	<30 min. touch dry 24 hours optimum properties or 25h at 80°C

Cured UVP33 Coating

Colour:	Transparent (blue reflection)
Electrical Properties	Meets UL746E
Insulation resistance (Ω)	10^{14} Ω (*MIL-I-46058C*)

Dielectric withstanding voltage	> 1500V (*MIL-I-46058C*)
Temperature Range:	-50°C to +125°C
Glass Transition Temperature (Tg)	26°C
SIR test	20°C-65°C, 95%RH, 7days (*IPC CC 830)*
Thermal shock	-65°C +125°C, 50 cycles
Flammability, per UL 94 V0	Meets UL94V0

The conformal coating UVP33 is compliance with REACH and ROHS regulations. If you want a certificate, please contact us (info@abchimie.com).

PACKAGING:	**REFERENCES**
ABchimieUVP33	
1 liter	UVP33 01L
5 liters	UVP33 05L
ABchimieUVP33 DS65	
1 liter	UVP33 DS65 01L
5 liters	UVP33 DS65 05L
Thinner DVU	
1 liter	DVU 01L
5 liters	DVU 05L
Cleaner	
Bulk 5 litres	SND 05 L

STORAGE AND SHELF LIFE:

Storage temperature: 5 to 30°C
A temporary lower temperature during few days (transport) doesn't distort varnish properties.

Shelf life: 18 months after the date of manufacturing

All information is given in good faith but without warranty. Properties are given as a guide only and should not be taken as a specification. ABchimie 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.