

## Conformal Coating (UV LED-Dual cure)

**New technology LED curing is a revolution indeed unlike conventional UV lamp, LED technology produces no toxicity during exposure, there is no need specific ozone extractor and then no risk for the operator**

**ABchimie is the lone manufacturer offering a conformal coating specially developed for this type of lamp providing speeds nearly comparable to UV lamps process but without the drawbacks.**

### PRODUCT DESCRIPTION

ABchimie526UV LED DS140 is a transparent single component designed to protect printed circuit boards subjected to harsh environments. It has dual cure technology (UV-LED / humidity) for crosslinking in the shadows. It has been developed for all applications where a fast process is necessary.

ABchimie526UV LED DS140 may be applied by brush, pad printing, spray machine and of course selective coating machine which is the ideal way to apply. The low viscosity of our system permits to limit the thickness around 80 microns.

The conformal coating ABchimie526UV LED DS140 is compliance with REACH and RoHS regulations. If you want a certificate, please contact us ([info@abchimie.com](mailto:info@abchimie.com)).

### FEATURES

- Excellent adhesion in harsh weather conditions,
- Fluorescent UV to control of the layer of conformal coating deposit,
- Operating temperature range -55°C to + 150°C,
- Can be soldered through without fear of highly toxic gases being produced,
- Resistant to mould growth,
- Excellent dielectric properties,
- **Approved IEC EN 61086,**
- **Approved UL 94V0 (QMJU2-E308681),**
- **Approved NF 16101, 16102,**
- Very fast curing under UV exposure,
- Moisture cure for shadowed areas,
- No VOC,
- Space ground reduced compared with solvent bases,
- High speed process, increase of the productivity,
- Low viscosity for select coat machine (used on head SC200, SC280, SC300 and SC400).

## **APPLICATION**

ABchimie526UV LED DS140 can be applied by brush, spray or selective coating machine:

Spraying (two crossed layers):	60-80 microns
Brushing:	40-60 microns
Selective coating machine:	80-120 microns (380mm/s)

A minimum temperature of 16°C and a relative humidity of at least 50% is recommended for the application of ABchimie526UV LED DS140. The relative humidity of at least 50% is recommended for the second polymerization mechanism.

Before applying the printed circuit board must be clean, dry and free of moisture. Pcb's are humidity sensor, it is important to remove it before coating application. A stage in an oven for 4 hours at 80 ° C is usually sufficient.

The varnish ABchimie526UV LED DS140 contains a fluorescent tracer which permit to check good varnish deposit, inspection circuits is facilitated. Fluorescence is more important the thickness applied is high.

## **PREPARATION OF THE PCB**

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.

We recommend using cleaning solvent or detergents SND, DNS or CIPEX 40 or 42.

## **CLEANING**

To clean equipment or clean uncured varnish ABchimie526UV LED DS140, we recommend to use SND or DNS solvents.

## **DRYING TIME AND CONDITIONS OF CURE**

### ***LED UV curing:***

It is important to use the appropriate LED equipment, as well as the recommended settings for the best properties of the varnish ABchimie526UV LED DS140:

**LED lamp 395 nm, Power : 8W/cm<sup>2</sup>**  
**Exposure time: 0,2s mini**  
**Distance LED light – varnish : 0 to 10cm**

Minimum UVA2 dose : **700mJ/cm<sup>2</sup>** (100µm)

A slight residual tack due to the oxygen in the air can appear. It disappears a few minutes after passing under the lamp.


The UV dose given is a minimum to guarantee a good curing of varnish. A higher dose of UV or an overexposure will not damage the product.

## BENEFITS OF DRYERS LED-UV

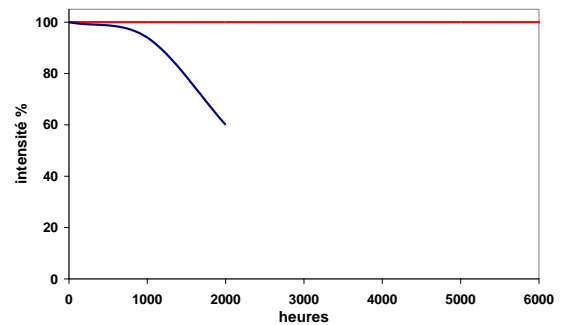
LED lamp solves temperature problems and permit to earn space compare to UV oven. They are indeed many advantages:

- No temperature on the substrate
- Reduced power consumption
- Environmentally friendly = no ozone therefore no air extraction system
- Distance from lighting 1 to 3 cm without loss of power
- cooling air or water
- Turning on and off snapshots
- Shelf life 15-25 000H
- Variation of power 0 to 100%
- High power density and variable geometry.

UV-LED lamps help maintain a high intensity longer than mercury arc lamps.

 Mercure lamp spectrum

 LED lamp spectrum



Process can work with recommended UV LED oven:

UVLED395 from SMT Europe

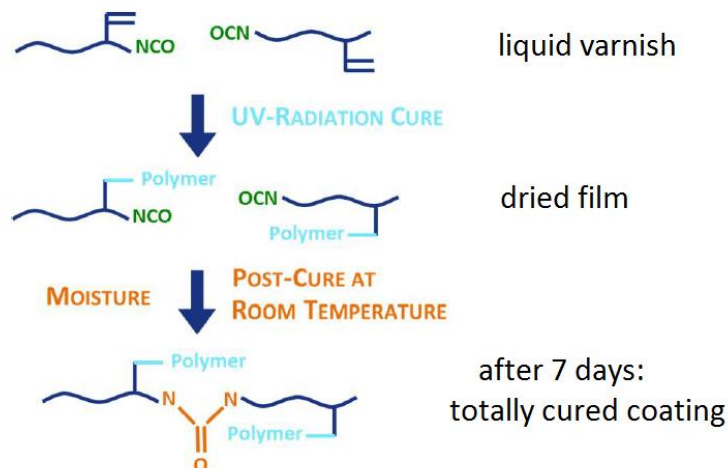
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### Moisture cure:

Ambient temperature, 50% minimum relative moisture

### Curing mechanism



## PROPERTIES

### ***ABchimie526UV LED DS140 liquid***

Base	Urethane Acrylate
Appearance	Transparent yellow
Non-volatile residue	> 97%
Viscosity at 25°C (ASTM D4212)	140 - 300 cSt
Flash point	> 100°C
Film Thickness	30 to 150 microns

### ***ABchimie526UV LED DS140 cured***

Appearance	Transparent
Adhesion ISO 2409	Class 0 (excellent)
Volume resistivity	10 <sup>14</sup> Ohm / cm
Insulation resistance (Ω)	10 <sup>12</sup> (EN 61086)
Dielectric strength	60kV/mm
CTI (DIN EN 60112)	>600
Tg	50°C
CTE (65 to +120°C)	528ppm/°C
Hardness Shore D	40
VRT	- 55°C+125°C, 10°C / min, landing 25 minutes, 20 cycles
VRT	- 25°C+25°C, 5°C / min, 15 min level, 100 cycles
Thermal Shock	- 40°C +90°C, 30mn/30mn, 1000 cycles
Voltage	> 1750V DC (NF EN 61086)
Temperature range from	- 55 ° C to + 150 ° C
Flammability	Self-extinguishing according to UL94 VO
Salt Fog	35 ° C, 5% salt, 2ml / h (NF EN 61086)
Varnish removal method	Mechanical (micro-abrasion) Locally with stripper DVP

## PACKAGING:

### ***Varnish ABchimie 526UV LED DS140***

1 liter	ABchimie526UV LED DS140 01L
5 liters	ABchimie526UV LED DS140 05L

### ***Varnish ABchimie 526UV LED DS55 (viscosity 55cSt @25°C)***

1 liter	ABchimie526UV LED DS55 01L
5 liters	ABchimie526UV LED DS55 05L

### ***Varnish ABchimie 526UV DS140 (curing with UV lamp)***

1 liter	ABchimie526UV DS140 01L
5 liters	ABchimie526UV DS140 05L

### ***Cleaner***

Bulk 5 litres	SND 05 L
Bulk 5 litres	DNS 05 L

## **STORAGE AND SHELF LIFE:**

Storage temperature: 5 to 30°C

A temporary lower or higher temperature (maximum 40°C) during few days (transport) doesn't distort varnish properties.

ABchimie526UV LED DS140 must be stored in an opaque container, sealed away from excessive heat. The varnish ABchimie526UV LED DS140 cures under UV action, it mustn't be exposed to any light source.

This varnish also crosslinking with moisture, make sure there is no moisture in the deposition process and in cans open. After opening a bottle, it is recommended to purge these cans started with a dry inert gas (nitrogen) to prevent polymerization of the coating during storage.

Date by use: 12 months after the date of manufacturing

In all cases, refer to the safety data sheet to ensure good storage conditions.

*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.*

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