

Soft conformal coating, Curing by UV/LED - Dual cure

The new LED curing technology is a revolution. Indeed, unlike conventional UV lamp, LED technology doesn't generate toxicity during exposure, there is no need for special aspiration for evacuation of ozone produced by UV and, there is no risk for the operator.

ABchimie is the only manufacturer offering a varnish, developed especially for this type of lamp which provides process speeds comparable to UV lamps without the disadvantages.



### PRODUCT DESCRIPTION

ABchimie746E UV LED 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.

ABchimie746E UV LED 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.

ABchimie746E UV LED 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 allow control of the deposited varnish layer,
- 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,
- Very fast curing under UV/LED exposure,
- Moisture cure for shadowed areas,
- No VOC,
- Space ground reduced compared with solvent bases,
- High speed process, increase of the productivity,
- Utilization with select coat machine (used on head SC200, SC280, SC300 and SC400)
- **Approved UL94 V0 (OMJU2-E308681)** 
- **Approved UL746E.** 

## APPLICATION

ABchimie746E UV LED 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)

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 ABchimie746E UV LED contains a fluorescent tracer which permit to check good varnish deposit, inspection of 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 ABchimie746E UV LED, we recommend using SND or DNS solvent.

## CURING CONDITIONS

ABchimie746E UV LED cures with UV LED rays and moisture for the second cure mechanism.

### **UV LED Curing :**

It is important to use the appropriate LED equipment, as well as the recommended settings for the best properties of ABchimie 746E UV LED:

**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.

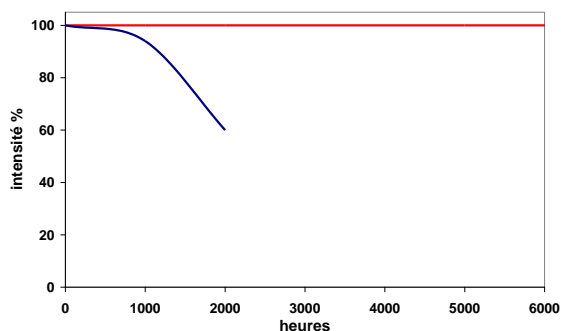
## BENEFITS OF DRYERS LED-UV

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.



 **Mercurie lamp spectrum**

 **LED lamp spectrum**

Process can work with recommended UV LED oven:

UVLED395 from SMT Europe

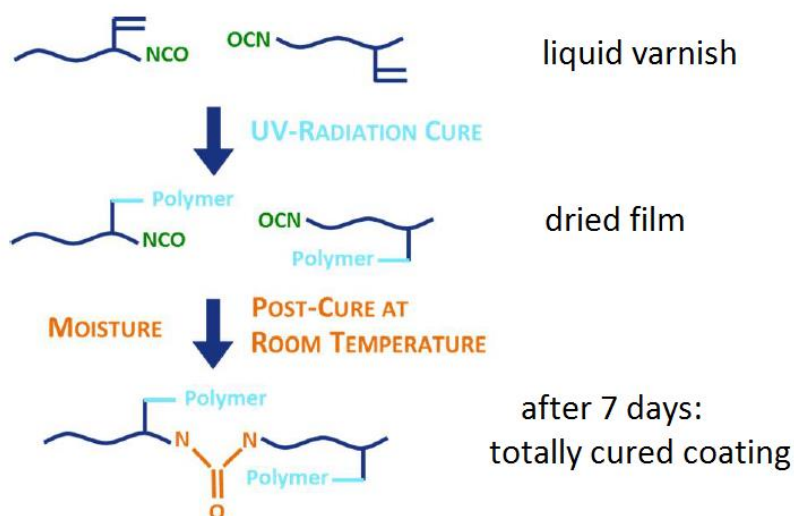
Contact: M. Joan BENARD  
SMT Europe  
08860 Castelldefels (Barcelona) SPAIN  
+34 902 551 583



### **Moisture cure:**

Ambient temperature, 50% minimum relative moisture

Curing mechanism :



## PROPERTIES

### **ABchimie746E UV LED liquid**

Base	Urethane Acrylate
Appearance	Transparent yellow
non-volatile residue	> 97%
Viscosity at 25 ° C	50 - 100cSt
Flash point	> 100°C
Film Thickness	30 to 150 microns

### **ABchimie746E UV LED cured**

Appearance	Transparent
Adhesion ISO 2409	Class 0 (excellent)
Volume resistivity	1 x 10 <sup>14</sup> Ohm / cm
Insulation resistance (Ω)	10 <sup>12</sup> (EN 61086)
Dielectric strength	60kV/mm
CTI (DIN EN 60112 on FR4)	>600
Tg	+16°C
CTE (T < Tg)	200ppm/°C
CTE (T > Tg)	250ppm/°C
VRT + humidity (IEC 60068-2-38)	+65°C and 93%HR / -10°C, 5°C/mn,
Thermal Shock	- 65°C + 125°C, 30mn/30mn, 50 cycles
Voltage	> 1750V DC (NF EN 61086)
Temperature range from	- 55°C to + 150°C
Varnish removal method	Mechanical (micro-abrasion) Locally with stripper DVP
Auto-extinguishing	UL94 V0

## PACKAGING:

### **Varnish ABchimie746E UV LED**

1 liter	ABchimie746E UV LED 01L
5 liters	ABchimie746E UV LED 05L

### **Varnish ABchimie746E UV (curing with UV lamp)**

1 liter	ABchimie746E UV 01L
5 liters	ABchimie746E UV 05L

### **Cleaner**

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

## REFERENCES

## 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.

ABchimie746E UV LED must be stored in an opaque container, sealed away from excessive heat, at temperatures not exceeding 40 ° C. The varnish ABchimie746E UV LED cures under

UV action, it musn'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

*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.*