TECHNICAL DATASHEET

ABchimie746E UV
ABchimie746E UV LED

May 2025

Soft conformal coating, curing by UV / LED and Dual cure

PRODUCT DESCRIPTION

ABchimie746E UV and ABchimie746E UV LED are transparent single component conformal coatings designed to protect printed circuit boards subjected to harsh environments. It has dual cure technology (UV - humidity) for crosslinking in the shadow areas.

ABchimie746E UV and 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.

FEATURES

- Excellent adhesion in harsh weather conditions,
- Fluorescent UV to allow control of the deposited varnish layer,
- Operating temperature range - 65°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,
- Low viscosity for accurate deposit with select coat machine (spray, jetter, film coater),
- **Approved UL94 V0 and UL746E (QMJU2-E308681).**

APPLICATION

ABchimie746E UV and 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

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. Pcbs 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.

ABchimie746E UV and ABchimie746E UV LED contain 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

Minimum temperature of 16°C and minimum relative humidity of 50% are recommended for coating application. 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. PCBs 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.

CLEANING

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

To clean equipment or clean uncured varnish ABchimie746E UV or ABchimie746E UV LED, we recommend using SND or ABclean solvents (**no aqueous solutions**).

CURING CONDITIONS

It is important to use the appropriate UV equipment (UV or LED) as well as the recommended settings for the best properties of cured conformal coating. These parameters have some effects on the reactivity and the surface of coating.

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

1- ABchimie746E UV LED - LED version

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

UV LED Curing :

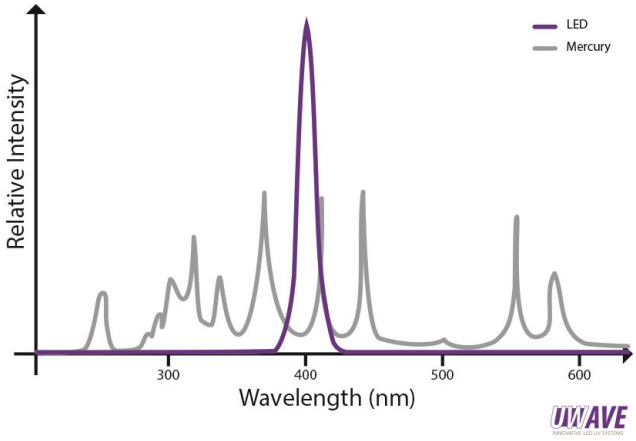
It is important to use the appropriate LED equipment, as well as the recommended settings for the best properties of ABchimie746E UV LED:

LED lamp 395 nm
Minimum UVA2 dose : **3000mJ/cm²** (100µm)
Minimum UVA2 power : **500mW/cm²** (100µm)

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

The UVA2 dose is a minimum dose recommended. The intensity depends on the lamp power and the lampe distance. UV dose may be increased by a longer exposure time. A higher dose of UV or a overexposure will not damaged the product. However a lower UVA dose can have a detrimental effect on product final properties therefore it is very important to ensure minimum recommended UVA dose is met with your curing system.

The following graph shows the wavelength range emitted by the LED lamp, different from the spectrum of a mercury lamp.



2- ABchimie746E UV - UV mercury version

UV Curing :
With an arc lamp (emitting UV from 200 to 400nm and IR up to 800nm)

Recommanded parameters :

Curing equipment : **arc lamp (mercury)**
Distance UV lamp – PCB : **1 to 10cm**
Minimum UVA dose: **3000mJ/cm²** (100µm)
Minimum UVA power: **150mW/cm²**

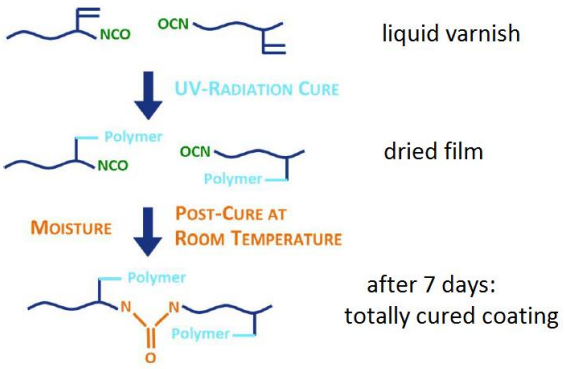
A slight residual tack du to the oxygen in the air can appear. It disappears a few minutes after passing under the lamp.

The UVA dose is a minimum dose recommended. The intensity depends on the lamp power and the lampe distance. UV dose may be increased by a longer exposure time. A higher dose of UV or a overexposure will not damaged the product. However a lower UVA dose can have a detrimental effect on product final properties therefore it is very important to ensure minimum recommended UVA dose is met with your curing system.

3- Moisture cure:

ABchimie746E UV and ABchimie746E UV LED have the same dual cure system, to assure curing in shadow areas. This curing is made at ambient temperature with 50% minimum relative moisture minimum for 7 days.

Curing mechanism :



PROPERTIES

Properties are the same for ABchimie746E UV and ABchimie746E UV LED.

ABchimie746E UV / LED liquid

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

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ABchimie746E UV / LED cured

Appearance	Transparent
Adhesion ISO 2409	Class 0 (excellent)
Insulation resistance (NF EN 61086)	10^{12} Ω
Dieletric strength	60kV/mm
Breakdown voltage (NF EN 61086)	> 1750V DC
Breakdown voltage (IPC TM 650 2.5.7.1)	> 1500V AC
Breakdown voltage (internal test method)	> 5000V AC
CTI (DIN EN 60112)	> 600V
Tg	+ 12.5°C
CTE (T < Tg)	200 ppm/K
CTE (T > Tg)	250 ppm/K
Thermal shocks (IPC TM 650 2.6.7.1)	-65°C/ +125°C, 30mn/30mn, 100 cycles
Temperature range from	- 65°C to + 150°C
Varnish removal method	Mechanical (micro-abrasion) Locally with chemical stripper (DVP)
Self-extinguishing	UL94 V0

ABchimie746E UV and ABchimie746E UV LED are compliant with REACH and RoHS regulations. If you want a certificate, please contact us (info@abchimie.com).

PACKAGING:	**REFERENCES**
ABchimie746E UV LED – LED version	
1 kg	ABchimie746E UV LED 01K
5 kg	ABchimie746E UV LED 05K
ABchimie746E UV – UV version	
1 kg	ABchimie746E UV 01K
5 kg	ABchimie746E UV 05K
Cleaner	
Bulk 5 litres	SND 05L
Spray – 12/ box	SND400 B
Bulk 5 litres	ABclean 05L
Spray – 12/ box	ABclean400 B
Stipper	
Bulk 1 litre	DVP 01L

STORAGE AND SHELF LIFE:

Storage temperature: 5 to 30°C
A temporary lower or higher (maximum 40°C) temperature during few days (transport) doesn't distort varnish properties.

ABchimie746E UV and UV LED must be stored in an opaque container, sealed away from excessive heat, at temperatures not exceeding 40°C. The varnish ABchimie746E UV and UV LED cures under UV action, it musn't be exposed to any light source.

These varnishes 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.

Shelf life: 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.