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MÓDULO DE CURADO UV

Request.

Curing oven, based on the following specifications:

- Module : INLINE curing oven, incl. Infeed and outfeed gates.
- PCB size : 230 x 400 mm.
- Max. curing width : max. 450 mm.
- Exhaust : Exhaust needed to minimize the amount of heating up the PCB.
- Coating to be cured : Peters Twin Cure DSL 1600 E-FLZ/75

Curing requirements.

Based on the coating used, the coating requirements are:

Drying/Curing

The curing process is based on two complementary chemical cross-linking mechanisms of different time lengths: UV curing and PUR curing.

UV curing

Curing can be effected in standard UV curing units.

→ Cure the **ELPEGUARD®** thick film coatings of the series **TWIN-CURE®** by applying the following UV radiation energy (given for a pure mercury lamp):

DSL 1600 E-FLZ **DSL 1600 E-FLZ/75** **DSL 1600 E-FLZ/150**	3000 ± 500 mJ/cm²
DSL 1600 E/500	4000 ± 500 mJ/cm²

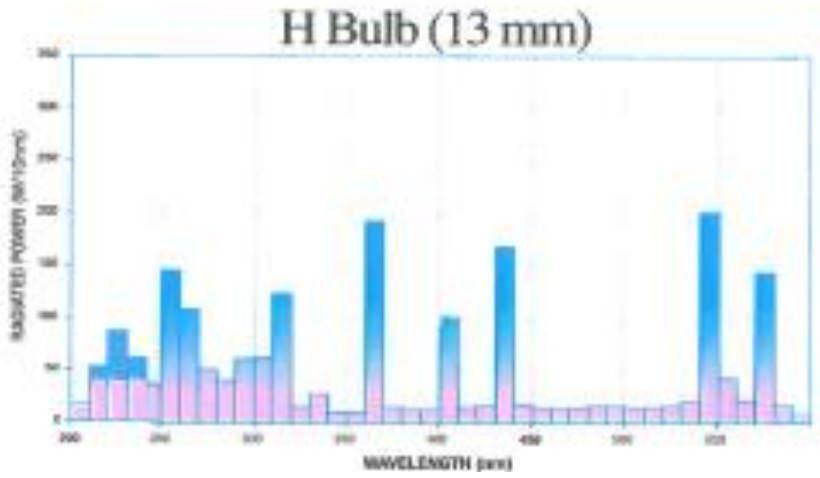
UV curing with suitable UV lamps is mandatory. The specified final properties cannot be achieved by PUR curing alone.

The UV cured assemblies can already be packed or encapsulated 1-3 h after UV curing.

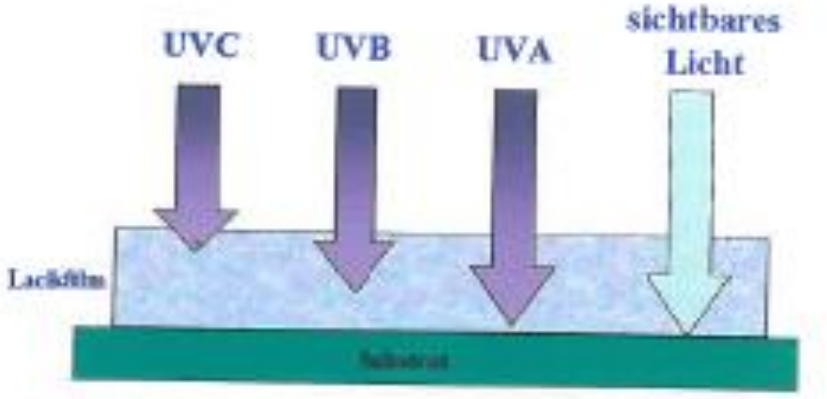
Humidity curing

In shadow zones, the coating will cure by reacting with atmospheric humidity. Depending on the layout and assembly of the printed circuit board, this reaction is completed after 8-14 days. Only after this time the final properties are achieved.

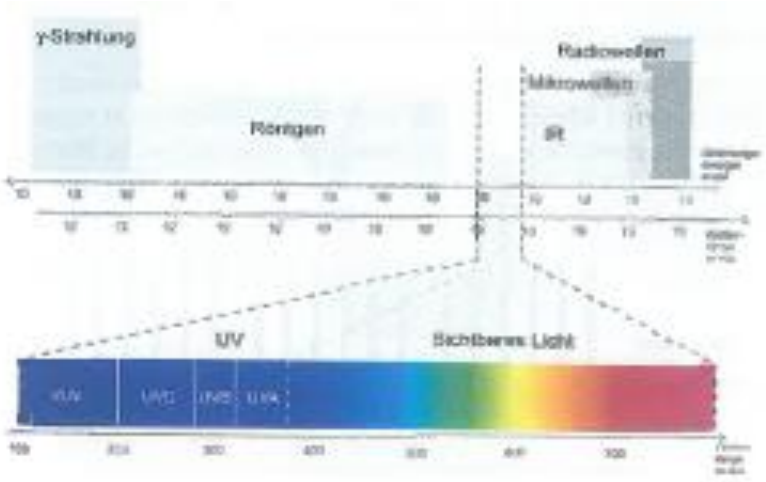
- Primary curing : By UV light.
- Secondary curing : By humidity



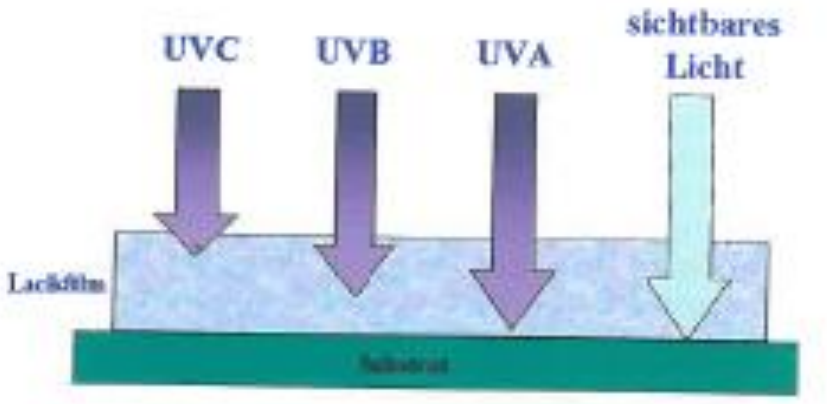
- UV Curing : By H-bulb.
  - Using UV-A and UV-C Light.
- Cure Time : 3-5 sec using the F-300 H-bulb at a distance of 100 mm above the surface of the PCB (Fusion lamp).
- Full range (UV-A, UV-B, UV-C) lamps provide faster curing than 'filtered sources'.



Why Full range of UV-A, UV-B, UV-C needed.



- UV-A , UV-B, UV-C : 200 – 385 nm.



- Curing depth within the coating layer is depending on the UVA, UVB and UVC.

Curing lamps.

- Curing by F-300, H-bulb lamps.
    - PRO:
        - Full Range (UV-A, UV-B, UV-C) of wave length's, therefore effective curing in wide range of wave length.
        - PCB can pass the curing zone in a short time, therefore minimum heat transfer into the product and less change to overheat the components on the PCB.
        - F-300 can be switched ON/OFF, so that Heat production (by IR wave length) will be reduced.
    - CONTRA
        - The IR component is heating up the system and the PCB, therefore a good exhaust is needed.
        - Exhaust is also needed to remove the Ozon produced by the lamp system.

Proposal.

Our proposal is to install Curing Module, using the Fusion Lamp system.

- The same system (except the type of Bulb) has been installed at FAGOR in Mondragon.
- Our proposal is to start with a 2-lamp system.
    - The focus distance between lamp and PCB surface is 98 mm.
    - Working 'out of focus' means that the effective curing width can be extend upto 200 mm.
    - A curing time of 4-5 seconds will be sufficient.
- An upgrade by installing an 3th Fusion lamp is always possible.