POLYMERTRONICS
printable electronic nanotechnology

Ultraviolet Curable OLED Encapsulation Fluid
Product Data Sheet

Version 1.0

Encapsulating an OLED reduces the rate of device degradation by keeping oxygen and water vapour out of the device. Ultraviolet curing is a process where a fluidic material reacts to ultraviolet (UV) light, becoming a solid in a few seconds.

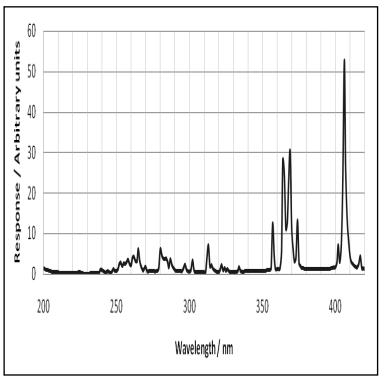
Benefits Of Ultraviolet Curing Encapsulation

1. Encapsulation of a OLED in 15 seconds
2. Durable OLED finish
3. Minimum mess
4. Simple to apply to OLED
5. Useful as an adhesive to hold glass slip over OLED cathode

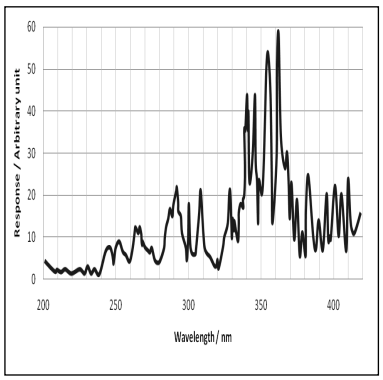
How Ultraviolet Curing Works

Ultraviolet curable fluids contain polymer molecules that link together when exposed to ultraviolet light of a wavelength that the polymer will absorb the energy of. The process is called cross-polymerization.

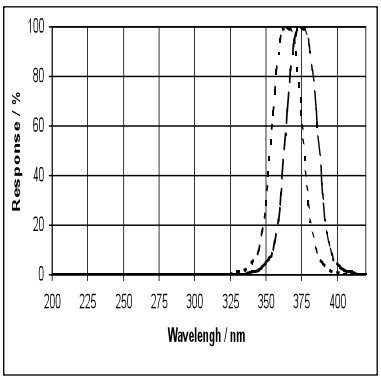
Ultraviolet light is be bandwidth 200 - 400nm of the electromagnetic spectrum. It is at the blue end of the visible spectrum, 400 - 700nm. UV light is split into three groups, UV-A (200 - 280nm), UV-B (281 - 315nm) and UV-C (316 - 400nm). UV light can be from several sources. All are found to cure Polymertronics' UV curable encapsulation fluid:



Mercury-Lead UV Arc Lamp Spectral Emissions



Mercury-Iron UV Arc Lamp Spectral Emissions



UV LEDs Spectral Emissions
(dots - 365nm peak)
(dashes - 375nm peak)

UV curing is faster if conducted in an inert environment such as nitrogen gas. Excluding oxygen speeds the reaction for the reason that where there is oxygen, then cross-linking process is inhibited.

Possible Investigations Ultraviolet Curing

1. Drip-test the encapsulation fluid down a substrate under UV light. Time the process. When the drop stop flowing, it is cured.
2. Use a length of sticky tape to observe how well the cured liquid has adhered to the substrate (this is an industry test for UV curable colour inks.
3. Observe the dot spread on different substrates pre and post cure. The profile of the drop is one function of the wetting characteristic of the substrate.

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OLED proof-of-principle suppliers and expertise:
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