OLED Barrier Fluid - Polymer Component
Product Data Sheet

Version 2

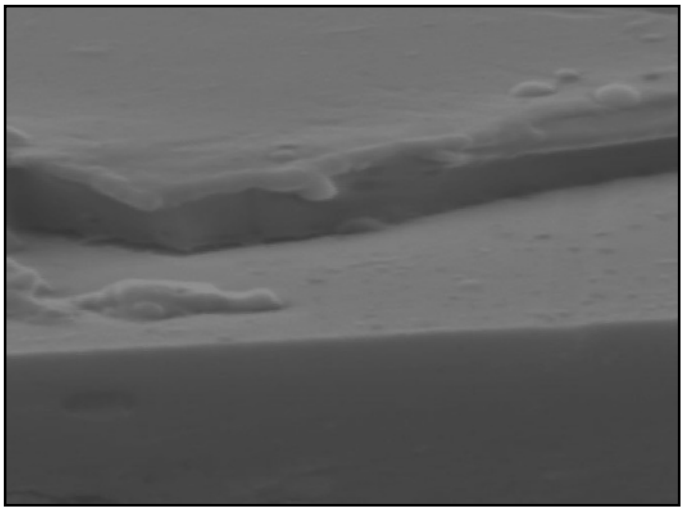
Organic light emitting diode (OLED) barrier layer that can be deposited by spin-coating methodology, or by vapour deposition.

This material can also be blended with small molecule fluids to create UV curable films.

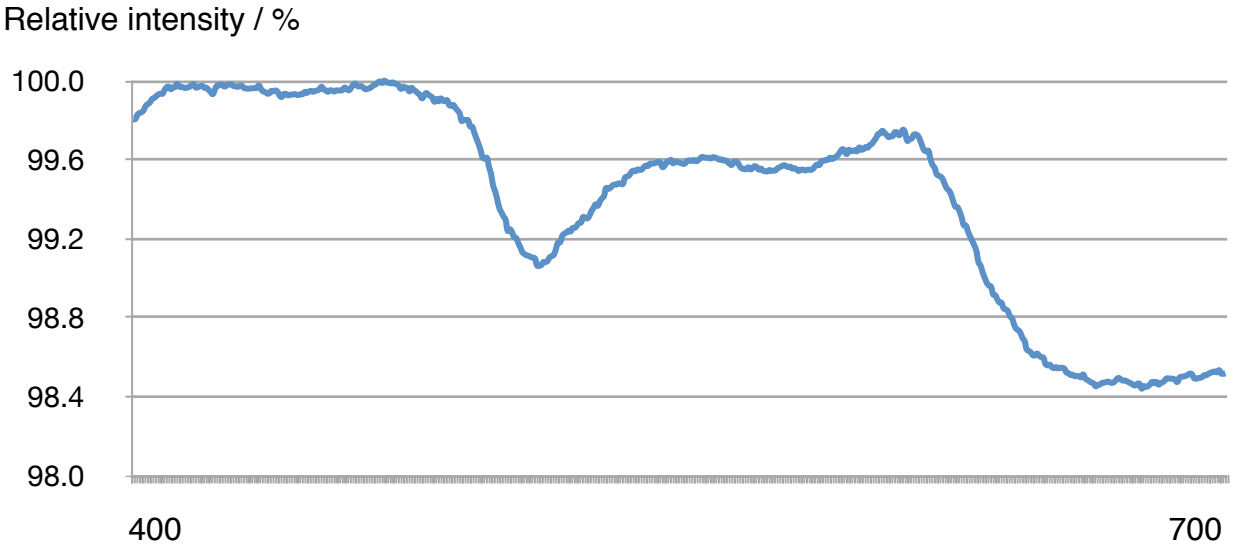
This electronics-grade material can be cross-linked under ultraviolet light to deliver a tough film. The grade of the cross-linked film is smooth, so it may be used as a part the active portion of an electronic device.

Benefits Of Polymer Component

1. Blend with small molecule fluids
2. Component of OLED barrier materials
3. Clear coloured when cross-linked
4. Cross-linked polymer has high durability
5. 98.5% light transmissive for 500nm film
6. Excellent surface morphology (see SEM image)
7. Cures at 254nm (mercury-iron arc lamp)
8. Cures in under 5s



Scanning electron microscopy (SEM) image of cast polymer post ultraviolet curing. Smooth surface enables other materials to deposited on top.



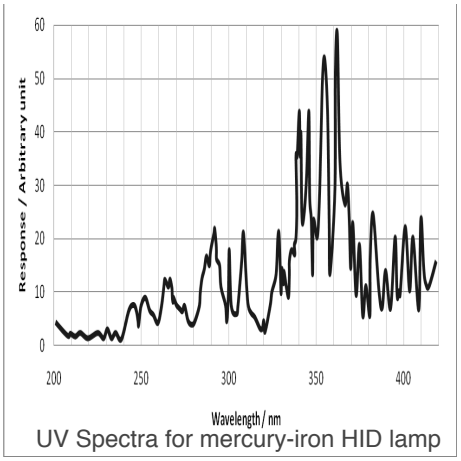
Transmission spectrum through cured polymer

How Ultraviolet Curing Works

Ultraviolet curable fluids contain polymer molecules that link together when exposed to ultraviolet light (energy) of a wavelength that the polymer can absorb. This results in the polymer molecules within the fluid linking together to form a film, This process is called cross-polymerization.

Ultraviolet light is in the bandwidth 200 - 400nm of the electromagnetic spectrum. It is at the blue end of the visible spectrum. Ultraviolet light is split into three groups:

1. UV-A (200 - 280nm)
2. UV-B (281 - 315nm)
3. UV-C (316 - 400nm)



UV Spectra for mercury-iron HID lamp

Mercury-iron (Hg:Fe) high intensity discharge (HID) lamps deliver a wide spectrum in the ultraviolet segment of the electromagnetic spectrum.

The photoinitiator wavelength is 254nm, the wavelength of greatest intensity from Hg:Fe arc lamp.

Mercury-lead (Hg:Pb) arc lamps will work, but are less effective that Hg:Fe. This is due to less emissions in the 254nm region. UV-LEDs emit no UV below 370nm.

UV curing is faster if it is conducted in an inert environment such as nitrogen gas. The exclusion of oxygen speeds the reaction for the reason that oxygen impedes the cross-linking process.

Polymertronics' Expertise

Polymertronics' products are designed to be out-of-the-box and simple to use. The product range is for businesses and educators who want to understand OLED technology and to develop products for market:

1. Flexible, rigid and inkjet printable OLED Science Kits for experimenting with OLEDs
2. Ultraviolet curing expertise and equipment for printable electronics
3. Electronic drivers for optimizing OLED performance
4. Solid state lighting development products and expertise
5. Full product development capability for applications
6. *Center-Point* for finding resources and answers to queries

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Note$_1$: Polymertronics reserves the right to amend this product's specification and/or look of the product without updating this data sheet.
Note$_2$: Polymertronics is a subsidiary of E²M Technology Limited, United Kingdom.