

## **Applications of Low Index Adhesives in Electronic Displays**

### **General**

Low index Adhesives (OCAs) are enabling new innovations in the field of electronic displays. Compared to common Liquid Optically Clear Adhesives (OCA, LOCA), the low index OCAs enable higher efficiencies, and better control of light propagation and directionality.

### **Some typical applications**

#### **Back-Light Units**

Using low index OCA, new integrated "multi-layered" back-light units are becoming feasible. It is now possible to bond the PMMA light-guide to the reflector and the diffuser film (or prism sheet, or lens array) while still keeping the light-guiding capability. While bonding the layers, the low index adhesive keeps the light "trapped" and guided inside the light-guide.

The directionality of the light coming out of the light-guide surface can be significantly improved.

#### **Auto-Stereoscopic Displays**

Based on the difference in refractive index between a low index OCA and a regular OCA, new ways to design auto-stereoscopic displays are emerging.

#### **Touchscreens**

More efficient touchscreens, with lower light absorbance, can be designed using low index OCA.

#### **Transparent conductors**

The transparency of transparent conductors based on silver nanowires can be significantly increased by the use of low refractive index polymer that encapsulates the silver nanowire. (See Patent Application Publication US 2013/0120846 A1).

#### **Digital Signage Displays**

In digital signage screens, the use of low index adhesives enables new innovations, based on the capability to better control light propagation.

#### **OLED Low Index Grid**

Low index OCAs enable significant improvement in light extraction of OLED screens and lighting units. The low index material is patterned as a grid, enabling the light which is trapped inside the OLED layer to be released to the adjacent layers.