

The Adherent[®]

Technology Insights from Adhesives Research



Taking your products further.™

ARclear[®] Optically Clear Adhesives: Customized and Clearly Different

The advent of commercially available low profile, high clarity display technology in the electronics industry was the catalyst for adhesive manufacturers to develop products with high-performance optical properties for bonding and assembling components in a diverse range of display applications.

Today, display manufacturers have a number of proven, standard optically clear adhesive choices available, including liquid and pressure-sensitive adhesive (PSA) formats. However, the continued evolution of display technology, as well as emerging new markets and applications that can benefit from the availability of optically clear technology, will continue to fuel the advancement of what is possible with these adhesives.

The Optically Clear Standard

Optically clear adhesives are commonly used to bond flexible-to-flexible or flexible-to-rigid components of touch screens, flat panel displays, flat screen CTRs and touch screens. This may include bonding backlight assemblies, polarizers, filters, diffusers and other optical components.

The overarching challenge of these applications is to identify an adhesive that offers long-term, reliable bonds while withstanding a variety of temperature and humidity extremes without compromising the optical clarity and performance of the device.

Important performance requirements of optically clear adhesives include:

- Low haze (<1%)
- High clarity (>97%)
- High light transmission (>95%)
- Non-birefringent
- Superior performance in a broad range of temperatures
- Low flammability
- Effective bonds to many types of surfaces



The ARclear[®] Custom Advantage

The ARclear optically clear PSA platform technologies from Adhesives Research (AR) are engineered to deliver high optical performance with virtually defect-free bonding in a broad range of chemistries and formats. The ARclear product line is comprised of rubber, acrylic and silicone

chemistries including PSA transfer adhesives, permanent and strippable constructions for display assembly, and self-wetting display protection film technologies. AR's optically clear products are manufactured in a clean-room environment and feature contamination-free release liner materials to prevent product defects.

What differentiates AR's optically clear products from others is our expertise in engineering this platform technology in combination with other desired features. For example, our optically clear technology can be tailored to achieve a range of refractive indices from 1.41 to 1.51. They can be modified to impart diffusive properties thereby eliminating a diffuser film. Other examples include our research in tinted adhesives to impart sunlight readability, and initiatives to improve the durability of displays for outdoor and military applications.

Optically clear adhesive technology is also utilized in the medical diagnostics industry for cover tapes used in PCR, real-time PCR, microfluidic, biochip, microarray and microwell applications that rely on immunofluorescent or colorimetric detection. Any interference or background fluorescence from an adhesive coating can affect the detection of optical characteristics. Sealing or cover layers used in these devices must exhibit little or no spectral emission at the biomaterial detection wavelength.



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