

# W I N D O W D R E S S I N G

## A NEW NANO-TECHNOLOGY FILM THAT CAN MAKE YOUR WINDOWS "SMART" AND ATTRACTIVE

The liquid crystal display technology used in wristwatches, and computer and TV screens will soon be used on your windows. This type of film called nanofilm, can be changed from translucent - in which it blocks some or all light - to transparent. Nanofilm uses liquid crystal technology to diffuse or emit all or part of the light, and has the potential to save billions of dollars in heating, cooling, and lighting costs.

**Why Nanofilm?** The Department of Energy's Lawrence Livermore National Laboratory estimates that windows in the United States currently use \$40 billion a year in energy. While the low-e windows introduced in the 1970s are 50% more efficient than the windows used before, Nanofilm potentially can increase efficiency by an additional 50%. Nanofilm offer 98% UV protection and 40% solar reduction, which will reduce heating and cooling costs. Nanofilm can also prevent fading of fabrics, paintings, and other art objects.

**How does it work?** A very thin layer of liquid crystal is placed between two transparent electrical conductors on thin plastic film. When the power is off, the liquid crystals scatter light and the glass appears translucent, thus providing privacy without the need for blinds or curtains. When power is applied, the electric field in the device aligns the liquid crystals, and the glass becomes transparent immediately. Dyes can be added to darken the device in the off state. The nanofilm can be manufactured in a variety of colors, and for curved, as

well as flat surfaces. The maximum size per sheet is 120cm X 300cm. Nanofilm can be controlled either by a switch or remotely through an application on a smart phone or watch.

### Applications

**Automotive:** When used on automobile sunroofs, nanofilm technology can reduce unwanted light and glare, and minimizes heat build-up inside the vehicle by automatically switching to its maximum heat-blocking state when the vehicle is parked.

**Aircraft and Marine:** Nanofilm blocks UV radiation to protect interiors. It reduces cabin heat build-up, and the window shades need not be pulled down to block sunlight.

**Architecture:** In corporate settings, Nanofilm can be used in conference rooms, executive offices, restaurants, retail stores, and hotels. In hospitals, clinical offices, and patient care areas, nanofilm offer a sterile and modern solution for privacy and hygiene. In residences, nanofilm provides privacy for bathrooms, kitchens, windows, and room partitions.

However, that is not all. Nanofilm panels can also be used for projection and touch screen effects that can transform store windows, showrooms, and any glass surface into HD quality video displays for advertising, motion pictures, etc. Finally, when you move out of your house, you can easily remove the panels and take them with you.

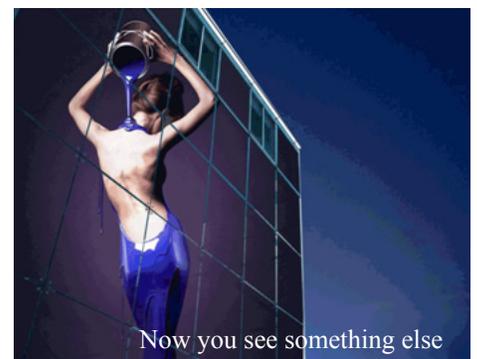
Nanofilm is an exciting new product that is an indispensable addition to an energy efficient home and a smart lifestyle.



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