

## A Light in the Window

The ins and outs of digital window films.

*"What light through yonder window breaks?"*

—William Shakespeare, 1596, from *Romeo and Juliet*

BY DUANE FAST



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**W**indows have been used to bring light into buildings for thousands of years. Glass was invented during the Bronze Age, but was not used widely for windows until the 7<sup>th</sup> century. It remained an expensive luxury item until Irving Colburn patented the sheet glass drawing machine in 1902, making the mass production of glass for windows possible. Interesting, but what does that have to do with digital printing? Nothing, actually; what concerns us here are the various types of films we use to cover our windows — for graphics and other applications.

### KEEP IT OUT

The first window films were invented by 3M in the 1960s. They were (and still are)

clear or tinted adhesive backed products that allow viewing through the film with a minimum amount of distortion. The original films were dark and not all that transparent, but they cut a lot of light and heat from entering buildings, thereby greatly improving the efficiency of the heating and air-conditioning systems. Today's films can cut fifty percent of the sun's heat and still remain almost invisible. Special films for museums use also eliminate 95% of the harmful UV rays that can cause fading.

### INSIDE/OUTSIDE

Digital printing has added a whole new dimension to the world of window film. A variety of print media designed for use on windows has proliferated in our industry. There are films for mounting on the inside of glass and films for mounting onto the outside of glass. There are films that are opaque, translucent or transparent, and films that are permanent or removable.

### BLOCK-OUT TIME

Opaque films let no light through whatsoever. They usually have a black or gray adhesive layer that blocks light trans-

mission. These prints have to be installed on the side of the glass that they will be viewed from. In other words, if you want to read the graphics from the inside, the film must be installed on the inside. If you want to read this type of film from both sides, you'd need to install the graphics on both sides of the glass.

Because all of the light hitting these is reflected back to the viewer, the image is usually the brightest, cleanest type of window graphic available. The two obvious drawbacks, though, are vandalism of an outside print and the amount of light that the print blocks from entering the building interior.

### CLEARLY SUPERIOR

Printing onto a clear, transparent film has several advantages over traditional white decals. First and foremost is the ability to mount the graphic on the inside of the glass. By printing the image in mirror format, the adhesive side can be placed on the inside of the glass. Since decals cannot be mounted onto cold glass, many parts of North America can only apply outdoor window graphics during



Vehicle windows can be successfully covered with graphics using perforated window films. They allow people to see out, while still maintaining bright graphics from outside viewing positions. (photo courtesy Clear Focus)

the summer months. This process solves that problem.

The finished graphic is also transparent and views on the other side of the glass are not obstructed. For some clients this semi-visible "ghost" of an image is just what they were looking for. For other customers who want more image visibility the answer is a simple white backing sheet applied to the back of the graphic.

### **LAYERS**

The white backing sheet behind these transparent prints can be opaque or translucent. Opaque white sheets block all of the light, but a translucent white material allows some light to pass through it. If the image should be seen from both inside and outside, printing can be done on the translucent white layer as well as the clear layer. This will allow the prints to be seen from both sides of the glass.

### **SECURITY DETAIL**

Office security is high on everyone's minds these days, but blocking visibility through outside windows can look ugly and cut out natural light sources. Etched vinyls that mimic sandblasted glass can alleviate this by providing an attractive, distinctive window covering that blocks people from looking in (and out), but does not block the light. Etched films are traditionally used with computer-cut graphics, but they are now available for digital printing as well. This opens a vast new field of design possibilities.

### **CLINGERS**

Static cling vinyl has been a popular material since its inception. Its advantage lies in its almost infinite re-usability. The material can be applied to glass from either the inside or the outside, with clear and white products respectively available for these two purposes. The clear prints for the inside of glass are generally printed mirror-image, then backed with white.

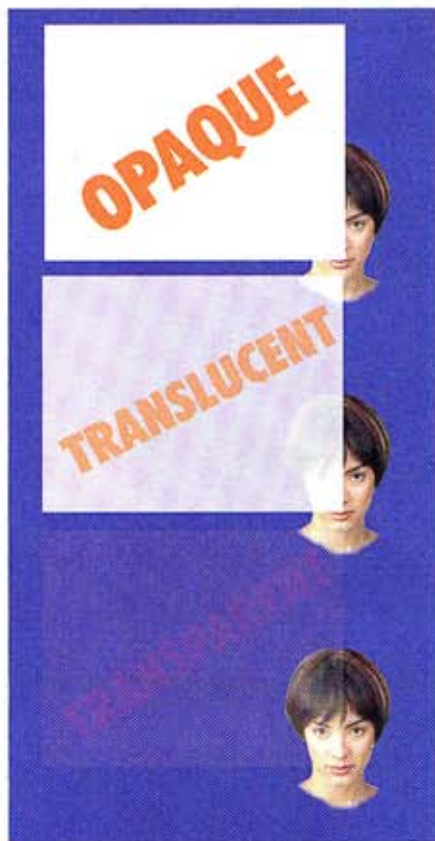
To apply the graphics simply peel off the backing sheets and mount onto a clean

glass surface. If the backing sheet is saved it can be used again and again, since no adhesive is involved. They stick to the ultra-smooth glass surface through the power of static charge. Special cold-weather versions are sold for the insides of store freezers and, of course, Minnesota winters.

Continued on next page



Posters can be applied to windows from the inside by printing onto a clear layer, then backing it up with white.



The density of the printing media determines not only how much light comes through, but how bright and clear the printed image is.



Building windows often use full coverage perforated window films, such as 70/30 perf, because they still allow light to pass through. (photo courtesy Clear Focus)

## HOLE IN ONE

Perforated window film (window perf) has caught the world's imagination. Graphics can be placed right over the glass areas of cars, trucks, buses and buildings without seriously obscuring the vision of those inside, or the amount of light transmission. The magic is simple. The film features tiny holes (perforations) that are spaced at regular intervals across the face of vinyl surface. The outside surface of the decal is printed with the required graphic, the inside (adhesive side) of the decal is black. These are mounted to the outside of the glass. For inside mounting a clear decal is printed mirror-image, then backed with white and black perforated layers.

Human eyes absorb light from surrounding objects. When people on the outside look at the graphic, their eyes absorb light reflected off of the image. The holes tend to disappear visually as your mind fills in the blanks. From the inside you are looking at a black surface full of holes. The eyes absorb the light from the objects seen through the holes and that is what the mind registers as the viewed scene. The black "disappears" from our perception since it reflects no light.

Different types of perforations are available for various applications. The classic 50/50 perf is half holes, half printable surface. These holes are relatively large and can be noticed easily by the eye from close distances. However the view from inside is undisturbed. This is the recommended material for covering vehicle windows. The other choices are 70/30 and 65/35 perf. These have more printable surface and fewer, smaller holes. This works well for complex images or graphics seen close up. The downside is that looking out is compromised due to smaller and fewer holes which is why they are unsuitable for vehicles, but may be great for retail or office window applications. 