



HEAT SHIELD™ WINDOW FILMS

What Most Window Film Manufacturers Won't Tell You - And Why

If you're in the market for window film, you probably manage a building that's overheating or you're sweltering with too much solar energy entering your homes windows. According to the California Energy Commission, 30% of a structure's cooling requirements are due to solar energy entering through glass.

It doesn't take a rocket scientist to figure out that the best place to stop that heat and reduce air conditioning costs, is at the window. Given that reality, the message to building managers and home owners is that window film is primarily for solar heat control. Only the true uninitiated think of window film as a product to insulate against heat loss in winter, though most solar heat control films also provide a modest enhancement to the overall home or building's insulation.

So if you're experiencing an overheating problem and think the best window film you can buy is the film that has the highest total solar energy rejected, you are on the verge of making a big mistake, a mistake that can cost you money. The use of conventional tinted and reflective heat-blocking window films can increase air conditioning and lighting costs and, in the case of commercial properties, decrease employee productivity due to increased, not decreased, temperatures. An additional cost from the use of such tinted and reflective conventional films is the change they cause in the external appearance of the windows which can have a negative impact on property values. All of this from installing a traditional metalized window film?

While most window film manufacturers talk about their tinted and reflective films' ability to block heat, they seldom confess that their films also block light. In some cases, highly reflective window films with metalized heat-reflective coatings also block as much as 91% of the visible light outside from entering the inside of a home or office.

Yes, many conventional tinted and reflective window films do successfully block unwanted solar energy, (though a surprising number aren't so great at that either), but because they also block desirable visible light, the result is a building or home in which natural levels of light are permanently excluded. In addition, conventional window films lessen the transparency and change the appearance (often by adding color) to existing glass. If you look at the edge of any piece of glass you will notice a slight green color. Professional photographers and astronomers will tell you that the addition of grey colors to glass will cause some yellowing. Curators around the world realize that to have the truest rendition of color and view window films should be ever so slightly green. In commercial properties especially, the consequent darkened interiors require increase lighting which not only adds cost but act as a generator of heat, often results in more, not less, use of air conditioning, defeating the cost-saving benefit of applied window film in the first place.

Research suggests that employees spending eight or more hours in unnatural dark spaces feel less energized, often suffer more illness, take more sick days and are less productive than their counterparts in naturally illuminated environments. What's a building manager to do?

Obviously, we could eliminate the problem of solar overheating if we got rid of windows entirely. Think of how much less costly structures would be to build and operate if the amount of external glass was significantly reduced or eliminated.

Before you wonder what such buildings might be like, the evidence is already in from the experience of building and using windowless schools and other structures constructed during the first great energy crisis of the 1970s. To put it bluntly, building occupants did not like working with few or no windows. Students' grades decreased and their attitude was less than positive.

It is important to note why people like windows. Few of us are lucky enough to have great views of the ocean or mountains from our windows but all of us appreciate, desire (and need) natural light as the primary source of internal illumination.

What does that leave us? On one hand, building occupants desire and need windows for the all important natural light and a connection with the outside environment. On the other hand, even a small amount of glass on the south or west side of a building can result in uncomfortable overheating and increased air conditioning and other costs.

If many conventional tinted and reflective window films can successfully block undesirable heat, why can't they simultaneously transmit desirable levels of light? **Well, from the point of view of a window film manufacturer, that's the tricky part of making window film.** While it is relatively easy to make tinted and reflective films that block heat, it's another thing entirely to produce what is called spectrally selective or spectrally tuned window film, capable of blocking undesirable heat while simultaneously transmitting desirable light.

The good news is that **HEAT SHIELD** spectrally selective window film is available and for years has been successfully installed on windows and fixed glass in commercial properties. The bad news for home owners and building managers in the market for window film, is that several manufacturers call their film spectrally selective when it is only marginally so.

The definitive test is, how much visible light does a film transmit? The ideal film would be totally clear yet able to significantly block unwanted infrared heat and reduce glare. A true spectrally selective film transmits at least 70% of visible light. Most calling themselves spectrally selective actually transmit no more than 58%. Such films when installed on a window become visible to the naked eye. If a window film looks tinted and not clear than it's not **optimally** selective in the all-important category of **visible light transmission**.

When faced with a choice between a tinted or reflective film that blocks more heat and a spectrally selective film that blocks less heat but transmits more light, the smart money is on the spectrally selective film. Case in point, the Los Angeles Department of Water and Power's (LADWP) rebate program for window film is based on a film's luminous efficiency constant, a measurement of its ability to simultaneously block heat and transmit light. While a very reflective film that blocks more heat than a spectrally selective film earns a 55 cent per square foot rebate from LADWP, a spectrally selective film that blocks less heat but lets in more light receives a higher rebate of 85 cents per square foot. Only spectrally selective films with luminous efficiency over 1.0 receive the higher rebate. (See table)

Less expensive conventional window films have a shorter payback compared to more expensive spectrally selective films. However, when you add on the cost of extra energy used for lighting and air conditioning operation due to conventional films inability to transmit sufficient visible light, the payback for conventional film and spectrally selective film becomes comparable. Given rising electricity and natural gas rates, the rate of payback for spectrally selective window film is always improving – averaging about four years. Factor in the issues of occupant morale, employee productivity and home or building appearance and it's clear that **HEAT SHIELD** spectrally selective window film is the preferred choice.

As seen on Channel 2News with Jason Boyer on going green
Installed on floors 1 and 2 US Bank Tower
Installed on INVESCO Field
HEAT SHIELD was show cased at the national office building show (BOMA)
2008 Colorado Convention Center
Featured in the Columbine Courier Colorado's largest weekly



HEAT SHIELD™ Joins the USGBC

Heat Shield Window Films has joined the U.S. Green Building Council as an industry-leading organizations proving that you can both green the built environment and green your bottom line. Established in 1993, USGBC is the leader in green building and development. Our LEED (Leadership in Energy and Environmental Design) Green Building Rating System provides the design and performance systems you need to have an immediate, measurable impact on key concerns like energy conservation, global climate change and occupant health. (www.usgbc.org)

Heat Shield Window Films is looking forward to the numerous benefits and opportunities that come along with membership in this remarkable organization.