

Let There Be Light

But not glare, fabric fading, excessive heat or cold.

Increasingly, American home makers are seeking to bring more light into their lives — with more glass being used in new and not-so-new homes. Consumer surveys by the National Association of Home Builders (NAHB) consistently show that contemporary home buyers are opting for open and airy architectural designs over the once popular Salt Box homes of years past. Today's building plans make much use of skylights, sun rooms, (also called Arizona or Florida rooms), greenhouses, patio doors and supplementary windows.

The use of glass in the average home expressed as a percentage of the total home living space has grown from about seven percent in the 1930s to more than 15 percent today, according to the American Institute of Architects (AIA). The volume of glass used in home construction also has grown as houses have become larger. The average modest house has grown in size from about 1,100 square feet of living space to 1,400 square feet. This phenomenon is greatest in the South, Southwest and West sunbelt areas of the United States where up-market homes often contain more than 6,000 square feet of space incorporating as much as 3,000 square feet of glass.

Drawbacks

The average home in the 1990s is larger and uses more glass in its construction than ever as American consumers reach out to the outdoors. This move to open, airy structures



Sunlight and the outdoors are no challenge for this room, which is protected with Vista solar control window film, which guards against the fading of fabric, furnishings, carpets and artwork by eliminating 99 percent of harmful ultraviolet rays.

Energy bills are controlled in this spacious sunlit room by Vista solar control window film, a high light transmission product that reduces energy consumption by cutting heat gain and loss through glass.



certainly is in line with the trend toward a more natural, healthy lifestyle, but the increased use of glass also brings certain drawbacks that many home owners do not anticipate.

Untreated glass can make rooms less comfortable by wasting heat or admitting excessive amounts of heat (both factors also raise energy bills!), allowing glare to make a room unusable, and causing upholstery, wallpaper, hanging art, carpets and other interior furnishings to fade rapidly because of exposure to rays of ultraviolet light.

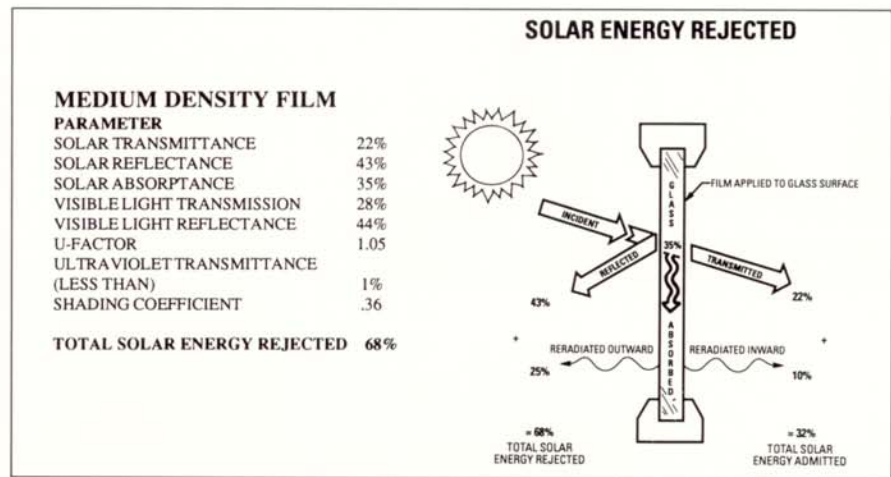
A pane of ordinary clear glass allows nearly all the visible light, heat and ultraviolet radiation striking it to pass through without being absorbed or reflected. A double-pane window of ordinary glass (the type used in many residences and often referred to as insulated windows) partially slows the passage of heat, if properly sealed, but it has little effect on glare and ultraviolet radiation.

Over the years a variety of means has been used to protect the home and the individual against the disadvantages of excessive sunlight; all of which have their individual special attributes. Shades reduce glare, draperies provide privacy, blinds provide variable control to protect the interior and solar control window films allow consumers to choose a desired energy profile for sunlit windows and maintain a totally unobstructed view.

Meeting the Challenge

Sunshine—visible light—is only one part of solar energy. The other parts are harmful ultraviolet rays and near infrared rays. Infrared rays are felt as heat and represent more than half of the sun's energy.

When shining through a window, all solar energy must be either reflected, absorbed or transferred. The challenge, then, is to achieve a desired balance for rooms with sunlit windows. Clear glass does not reflect or absorb much solar energy. Instead, it allows almost all solar energy to be transmitted into a room creating hot and cold spots in the living space. Window film, however, transmits some visible light but little else. It rejects almost all



ultraviolet rays and reflects both visible light and infrared heat providing a comfortable ambiance in rooms all year around.

There are many criteria for judging which window films are ideal for an individual situation. One of the most important considerations is the shading coefficient. This is a measure of the efficiency of a window system's solar control capability. It is expressed as the ratio of the solar heat gain through any given window system to the solar heat gain that would occur under the same conditions if the window were made with clear, unshaded double-pane window glass. The lower the shading coefficient, the greater is the capacity of the window to control solar energy.

A second criterion is the percentage of total solar energy rejected by a glazing system, which equals the amount of incident solar energy reflected by the system plus that part of the solar energy that is absorbed by the system and re-radiated outward. (See Illustration 1.) According to Green Seal, an environmental consumer education organization, about 20 percent of the U.S. annual energy budget is consumed on space heating and cooling. Roughly one quarter of this space conditioning energy is wasted as thermal losses and gains through windows. Half of these heat losses through windows (which represents about 350 million barrels of oil per year costing nearly \$8 billion annually) could be averted through the implementation of the latest win-

dow treatment technology.

"Technology developments allow windows to be superior thermal insulators while optimizing solar heat gain for heating or cooling applications and providing year-round supplementary lighting, all without compromising human health, productivity, comfort or architectural aesthetics," Green Seal recently reported.

Today, there exists a strong potential for suppliers of window coverings to increase business by offering a multifaceted solution for solar control problems. The successful window covering business of the '90s will provide a service that offers consumers a combination of shades, draperies, blinds and window film techniques to deliver energy savings, temperature balance for year-round comfort, increased usable interior space, glare and fade control, privacy and protection.

Virginia L. Kubler is the director of sales and marketing for Courtaulds Performance Films Inc. Martinsville, VA, a leading manufacturer of both film components and coated and laminated films including Low E, a polyester and metalized coating laminate for solar insulation. The company offers a premier line of solar control window films, including the Vista and Llummar lines.

■ **DWC**

Courtaulds Performance Films, Inc. is pleased to have strict quality systems and has been ISO certified (Certificate Number FM 35957).