NSG GROUP

# Technical Bulletin

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## GLAZING CHOICE CAN AFFECT FADING OF HOME FURNISHINGS


### *Summary*

The glazing industry placed much emphasis on the Ultraviolet (UV) transmission of glass relative fading damage in home furnishings. Although UV radiation is the major contributor to the fading of most interior fabrics, other factors such as temperature, humidity, and even visible light can play significant roles. Two major concerns arise when a simplistic approach of equating fading to UV transmittance is used.

First, there is not a single industry standard for calculating UV transmittance (Tuv). One of the most common methods of reporting Tuv defines UV energies as ranging from 300 to 380 nanometer wavelengths. This method is included in the Lawrence Berkeley Laboratory's Window 6 performance calculation software. Other methods of reporting Tuv (300 to 400 nm) are sometimes used which result in very different values for the same glazing, making comparisons impossible.

A second concern is that Tuv, no matter how it is defined, is responsible for only a portion of the total fading damage witnessed in home furnishings. Lawrence Berkeley Laboratory's Window software addresses this fact by defining a damage weighted transmittance (Tdw-ISO). Tdw-ISO considers that wavelengths from 300 to 600 nanometers, well into the visible light range, contribute to material fading.



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The following Tuv and Tdw-ISO values were calculated using the LBL Window software for 6mm thick Pilkington North America, Inc. monolithic products. Note that a clear laminate consisting of two pieces of 3mm clear glass and 0.030" clear Solutia pvb was included for comparison.

| Calculated Tuv and Tdw-ISO values.<br>Monolithic Glass (6mm) | Tuv (300-380) | Tdw-ISO (300-600) |
|---|---|---|
| Pilkington **Optifloat**™ Clear | 63% | 81% |
| Pilkington **Energy Advantage™** Low-E Glass | 49% | 71% |
| Pilkington **Optifloat**™ Blue-Green | 32% | 64% |
| Clear Laminate | 0% | 62% |
| Pilkington **Eclipse Advantage™** Clear | 30% | 53% |
| Pilkington **EverGreen**™ | 14% | 48% |
| Pilkington **Optifloat**™ Bronze | 24% | 44% |
| Pilkington **Eclipse Advantage**™ Blue-Green | 16% | 43% |
| Pilkington **Optifloat**™ Grey | 21% | 40% |
| Pilkington **Eclipse Advantage**™ Grey | 11% | 27% |
| Pilkington **Eclipse Advantage**™ Bronze | 10% | 25% |

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The final table contains Tuv and Tdw-ISO data calculated using LBL Window software for some typical insulating glass units used in residential windows.

| Insulating Unit (3 mm glass / 13 mm air space / 3 mm glass) | Tuv (300-380) | Tdw-ISO (300-600) | Visible Transmission |
|---|---|---|---|
| Clear / air / Clear | 67% | 78% | 83% |
| Clear / air / Generic Soft-coat Low E (E=0.08) | 37% | 66% | 79% |
| Clear / air / Pilkington **Energy Advantage**™ Low-E Glass (E=0.15) | 55% | 70% | 77% |
| Clear / air / HM88 / air / Clear | 1% | 52% | 73% |
| Clear / air / Generic Soft-coat Low E (E=.04) | 17% | 55% | 72% |
| EverGreen / air / Pilkington **Energy Advantage™** Low-E Glass (E=0.15) | 20% | 49% | 65% |
| Pilkington **SuperGrey™** / air / Clear | 5% | 18% | 22% |

Note that although the single glazed clear laminate, and the Southwall Heat Mirror HM88 product have near zero T-uv (300-380), their Tdw values of of 62% and 52% respectively show they allow more of the fading causing wavelengths of energy to pass than through a window constructed with Pilkington **EverGreen**™ plus Pilkington **Energy Advantage**™ Low-E Glass.

The information contained in this bulletin is offered for assistance in the application of Pilkington North America Inc. flat glass products, but **IT DOES NOT CONSTITUTE A WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE**. Actual performance may vary in particular applications.

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