Technically Speaking

Misleading Optical Data for Solar Films

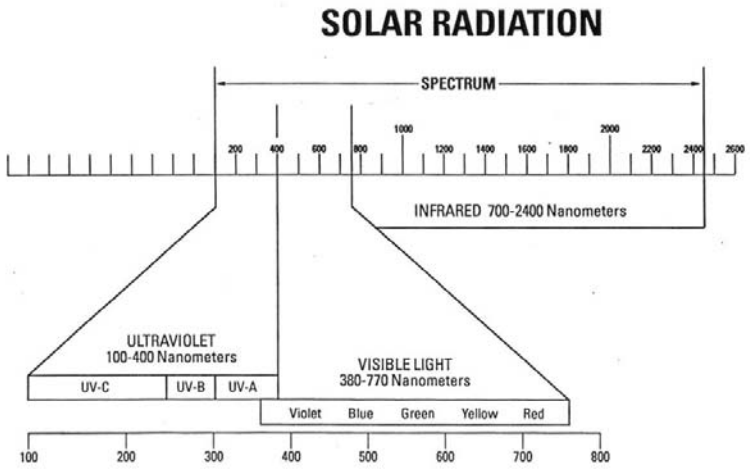
Madico, a world leader in Solar Control and Safety Window Films, feels it is important to understand which claims of film performance are legitimate and which are strictly marketing fodder.

All solar performance, (transmittance, reflectance, and emittance) for Madico's Solar Control Window Films have been determined in accordance with NFRC 300 and listed in the NFRC spectral data library.

The National Fenestration Rating Council (NFRC) is recognized by the U.S. Department of Energy and is a non-profit organization that administers the only uniform, independent rating and labeling system for the energy performance of windows, doors, skylights, and attachment products.

Based on the spectral data required and recognized by the NFRC, Total Solar Energy Rejected, TSER, is reported based on the solar energy reaching the glass directly on a 90° angle. Solar control properties based on **various angles of the sun are not recognized by the NFRC nor are they pertinent to the film or solar control glass' performance**. The values reported by suppliers and the NFRC are based on maximum solar energy potential.

Another misunderstood property reported by some film and glass suppliers is IR Rejection. Near IR, Infra Red solar energy is the area of the spectrum from approximately 720 nanometers to 2500 nanometers. Below the total solar spectrum is illustrated:



Visible light, which accounts for about 44% of solar energy, ranges from approximately 280 nm to 720 nm depending on which scientist you speak to. Before the visible range is UV, Ultraviolet light which accounts for only about 3-4% of solar energy and is almost entirely blocked by either the atmosphere (UVC) or the film (UVA & B).

The remainder of the solar spectrum is the Infrared (IR) which accounts for the remaining 53% of solar energy. Almost all window film manufacturers would be able to claim greater than 90% IR blocking if reporting only one wavelength of the IR spectrum. All three components of solar energy generate heat when allowed to enter your building. When reporting total solar energy rejected, all aspects of solar energy must be accounted for.

Do not be fooled by claims that a product rejects ridiculously high amounts of IR. These claims are based on ONE wavelength of IR, not the entire spectrum. IR rejection should be reported in conjunction with all solar energy and should be reported based on the total solar spectrum. **The Solar Heat Gain Coefficient is the accepted NFRC measure of solar heat rejection—and this calculation includes IR rejection. Separating the IR rejection for purposes of heat gain reporting can be misleading.**

Madico wants everyone to be informed consumers. We make these statements to help consumers understand the factual data regarding energy savings so that they may make informed decisions when choosing a solar control window film or glass product. All information included is represented to the best of our knowledge at the time of publishing.

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