

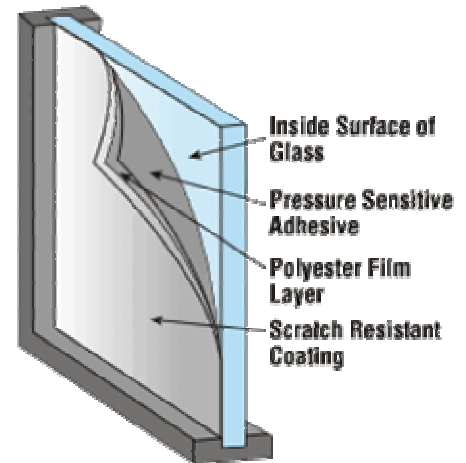
Solar Performance Specification Definitions

Adhesive (PS and DPS)

- Pressure Sensitive Adhesives (PS)
- Detackified Pressure Sensitive Adhesives (DPS)

PS and DPS Adhesive systems use the same adhesive formulation. When the silicone release liner is removed from regular PS, it exposes a relatively soft and tacky surface.

The DPS adhesive system has a protective gel coating that covers the Pressure Sensitive Adhesives. When the liner is removed its adhesive surface is not sticky, or as is called in the trade “detackified.” This adhesive offers a strong bond, film clarity and longevity.



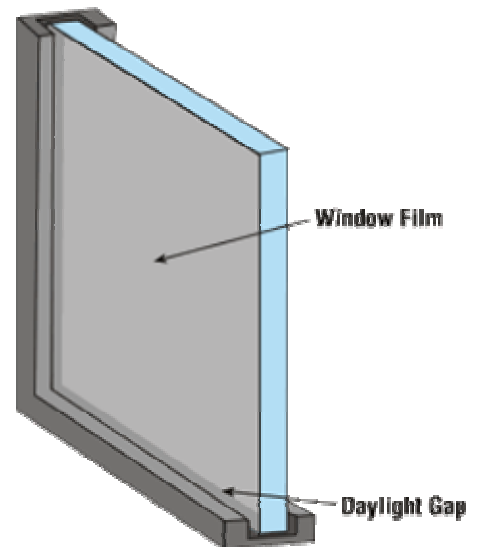
British Thermal Unit (BTU)

The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

1 BTU = 252 Calories (CAL).

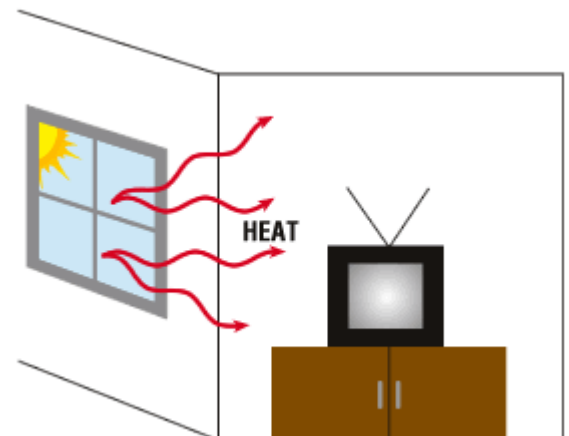
Daylight Installation

A common method for installing solar and safety window film. Window film is precut slightly larger than the framed glass pane, then trimmed to at least 1/8 inch (depending upon the film thickness) of the glass edge.



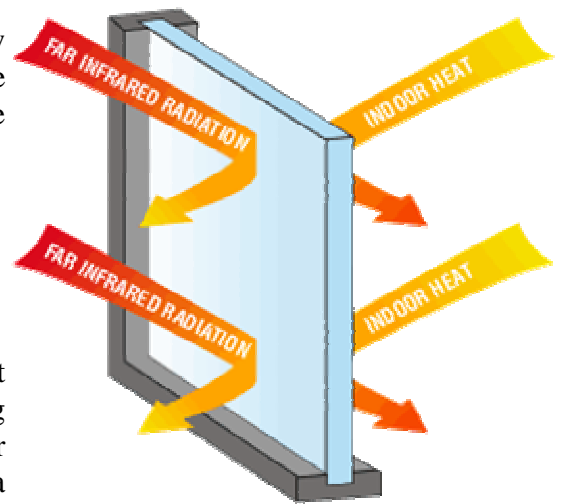
Emissivity (E)

Emissivity is a measure of surface’s ability to absorb or reflect far-infrared radiation. The lower the emissivity the higher the far-infrared reflection. Infrared radiation is that which is sensed by the body as heat. The sun’s rays contain ultraviolet, visible and near-infrared radiation. Low-E windows transmit almost all of this radiation from the sun, but reflect longer far-infrared wavelengths. Far-infrared radiation is re-radiated from objective (both inside and outside the home) that have been heated by the original radiation from the sun or heated in other ways. The lower the Emissivity rating, the better the insulating qualities of the glazing system is.



Low-Emissivity

Low-Emissivity, or Low-E, refers to a coating on glass or window film that reduces heat loss through the window film. The lower the emissivity rating, the better the insulation characteristic of the glazing system in regard to heat loss.



Luminous Efficacy (LE)

Is the ratio of daylight transmission to solar heat transmission that passes through a glazing system which is determined by dividing the visible light transmission by the shading coefficient. For example if a film has a visible light transmission of 70%, and a shade coefficient of .50, it would have a luminous efficacy of 1.40. The higher this number, the better it indicates how much of the transmitted solar energy is visible light, versus heat. This ratio is used to determine “spectral selectivity.” Any product above 1.00 is considered to be “Spectrally Selective.”

MIL

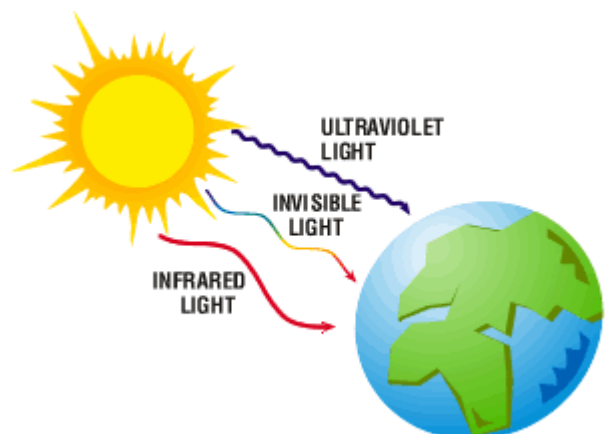
Is the unit of length for 1/1000 of an inch (.001”), and used in expressing thickness of window films. 1 MIL = 25 microns.

Shading Coefficient (SC)

Is the ratio of solar heat gain passing through a given glazing system to the solar heat gain under the same conditions for clear, unshaded double strength window glass. Shading Coefficient defines the sun control capability of the glazing system. The lower the Shading Coefficient number, the better the solar shading qualities of the glazing system.

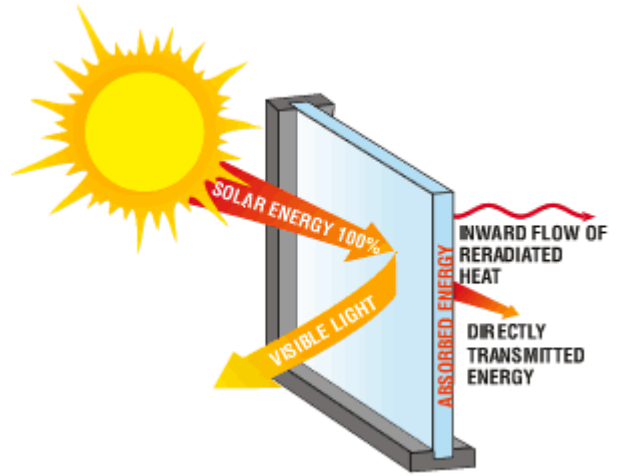
Solar Energy

Is energy from the sun that is represented by visible light (glare), infrared radiation (heat) and ultraviolet radiation (fading and health hazards). Each form of energy is differentiated by its wavelength.



Solar Heat Gain Coefficient (SHGC)

The effectiveness of a glazing system is measured in terms of percentage of solar energy that is either directly transmitted or absorbed and then re-radiated into a building. The Solar Heat Gain Coefficient is a measurement term used extensively in the heating and cooling industry. Another similar measurement more often used in the window film and glazing industries is the Shading Coefficient, which measures the performance of glass windows with film, or other coatings on them versus clear glass. In both instances, the lower the Coefficient number listed for a particular film or coating, the better it is able to reduce solar heat.



Sputtered Films

Sputtered films represent the industry's latest innovative technology. There are two types of sputtered films:

- Films featuring a metal or metal alloy, e.g. Stainless steel, nickel-chromium, etc..
- Films featuring a metal oxide.

Sputter films have excellent solar heat control properties like those that are produced by the metallizing process. Sputtering is a versatile process as several layers of different metals can be applied to a single piece of film (metal on metal laying) resulting in unique colors and higher levels of selective transmission.

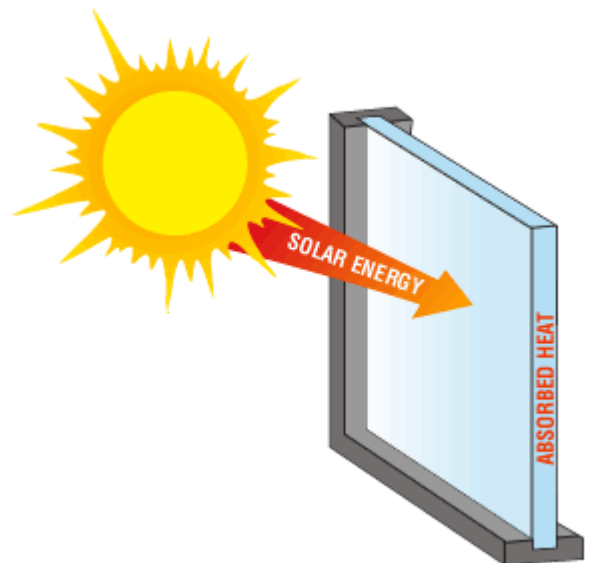
TON-HR

One ton of air conditioning = 12,000 BTU/HOUR (3.52kw).

Total Solar Absorptance (TSA)

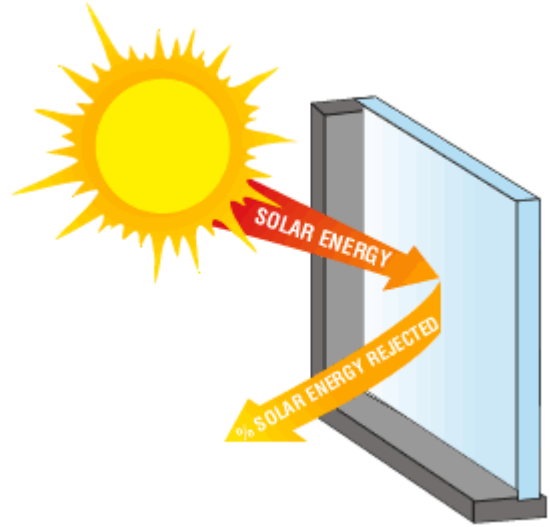
This is the percent of incident solar radiation that is absorbed by a glazing system. The ratio of the amount of total solar energy absorbed by a glazing system to the amount of total solar energy falling on the glazing system. Solar Absorptance is that portion of total solar energy neither transmitted nor reflected. Since solar transmitted and solar reflectance is measured directly, the following equation should be used in calculating solar absorptance.

Solar Absorptance = 1.00 – (solar transmittance) – (solar reflectance)



Total Solar Energy Rejected (TSER)

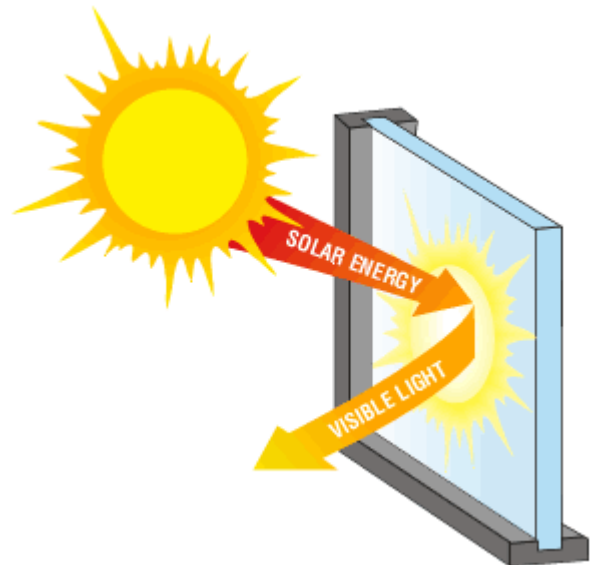
The percent of total solar energy (heat) rejected by a glazing system (It equals the solar reflectance plus the part of solar absorption which is re-radiated outward.) The higher the TSER number, the more solar energy is rejected.



Total Solar Reflectance (TSR)

This is the percent of incident solar radiation that is reflected by a glazing system.

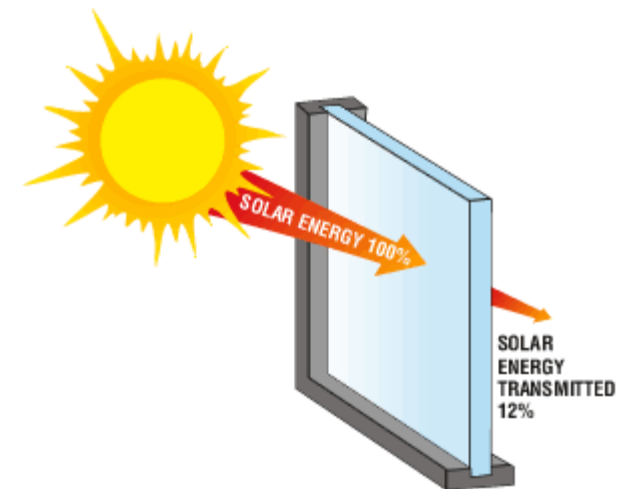
The ratio of the total solar energy which is reflected outward by the glazing system to the amount of total solar energy falling on the glazing system. On filmed windows this reflectance is a function of the side of the film facing the window surface.



Total Solar Transmittance (TST)

This is the percent of incident solar radiation that directly passes through a glazing system.

The ratio of the amount of total solar energy in the full solar wavelength range (300-2,100 nanometers) that is allowed to pass through a glazing system to the amount of total solar energy falling on that glazing system.



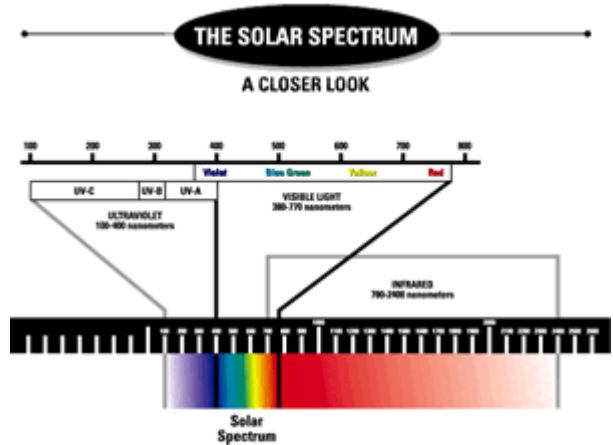
Ultraviolet (UV)

The percent of total ultraviolet light that is prevented from passing through a glazing system.

There are three types of ultraviolet rays:

- UV-A (320 to 400 nanometers)
- UV-B (290 to 320 nanometers)
- UV-C (100 to 290 nanometers)

The earth's atmosphere and ozone layer filters out most of UV-C and a percentage of UV-B rays. The UV-B cause's sunburn and prolonged exposure to it over many years has been linked to skin cancer. Window films block a large portion of ultraviolet light from passing through glass.

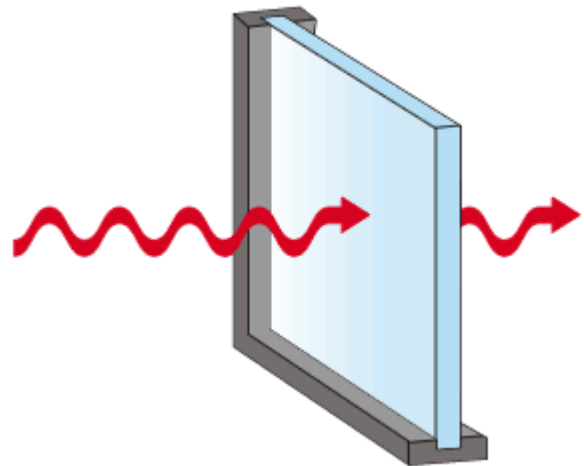


U-Factor

The overall coefficient of heat transfer equals the reciprocal of "R" value. The lower the U-Factor, the better insulating qualities of the glazing system.

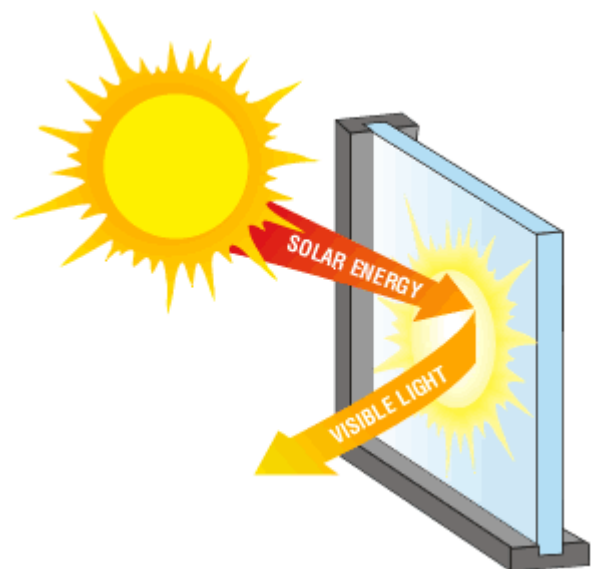
U-Value

The amount of conductive heat energy (BTU's) transferred through one square foot of a specific glazing system for each 1° F temperature difference between the indoor and outdoor air. The overall coefficient of heat transfer by conduction equals the reciprocal of R-Value ($U = 1/R$). The lower the U-Value, the better insulating qualities of the glazing system.



Visible Light Reflectance (VLR)

The percent of total visible light that is reflected by a glazing system. It measures the percentage of visible light that is being reflected by the window film. Glass with no film on it has (8%) visible light reflectance. Films that are highly reflective offer high heat rejection capability and high visible light reflectance. This film will have a shiny outward appearance during the daylight hours; and this shiny appearance reverses to the inside of the window at night. A higher VLR rating offers better glare control. Films with higher ratings tend to be more reflective and/or darker.



Visible Light Transmittance (VLT)

This is the percentage of visible light (daylight) that passes through a glazing system. As a note 1/8 inch clear glass transmits a high percentage of visible light 89%. A lower VLT rating tends to be better for glare control, while a higher rating is preferred for maintaining natural light.

Facts provided by: IWFA Flat Glass Education Guide and AIMCAL Energy Management Program Window Film Training Guide.