

Performance Terminology

Property Measurement and Value Calculations

Visible and solar optical property data is based on laboratory spectrophotometer measurements. Shading Coefficient, U-Values and Relative Heat Gain data calculations were developed through the use of the Lawrence Berkeley Laboratory WINDOW 3.1 computer analysis program. U-Values are based on center-of-glass conditions. Solar Factor and K-Value calculations are in accordance with International Standard ISO 9050: 1990 (E).

Shading Coefficient

The ratio of solar heat gain through a particular glass type as compared to the solar heat gain through a lite of 1/8" (3 mm) clear float glass, set in identical conditions. The lower the shading coefficient, the better the performance of the product at restricting heat gain.

U-Value

A measure of air-to-air heat transmission due to thermal conductance and the difference in indoor and outdoor temperatures. As the U-value decreases, so does the amount of heat transmitted through the glazing material. The lower the U-value, the better the performance of the product. U-values are based on center of glass calculations. English units are BTU/hr/ft²/°F; metric units W/m²/°C. Winter U-values are based on standard ASHRAE conditions of 0°F (-17.8°C) outdoor temperature, 70°F (21°C) indoor air temperature, 15 mph (24 km/hr) outdoor air velocity, natural convection of indoor air and no sun (nighttime). Summer U-values are based on standard ASHRAE conditions of 90°F (32°C) outdoor air temperature, 75°F (24°C) indoor air temperature, 7.5 mph (12 km/hr) outdoor air velocity, natural convection of indoor air and 248.3 BTU/hr/ft² (788 w/m²) solar radiation.

Relative Heat Gain

The amount of total instantaneous heat gain through a glazing material taking into account the effects of solar heat gain (shading coefficient) and conductive heat gain (U-value). The lower the relative heat gain, the better the performance of the product. English units are BTU/hr/ft². Metric units are W/m². Relative heat gain is calculated as: RHG (English) = (Summer U-value X 14°F) + (Shading Coefficient X 200 BTU/hr/ft). RHG (Metric) = (Summer U-value x 7.8°C) + (Shading Coefficient x 630 W/m²). Note: 14°F (7.8°C) is the difference between outdoor and indoor temperatures. 200 BTU/hr/ft² (630 W/m²) is an ASHRAE solar heat factor.

Solar Factor

The ratio of quantity of heat entering a room through the glazing to the intensity of the total direct incident solar energy radiation. The lower the solar factor, the better the performance of the product.

K-Value

International Standard ISO 9050: 1990(E) measure of thermal conductivity values of glazing materials taking into consideration the thermal resistance of the material and the air or gas space; the superficial thermal exchange coefficients of the interior and exterior faces of the glazing; and the average temperature of the glazing. The lower the number, the better the performance of the product. Metric units are expressed in W/m²/°C.

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