

SolarInnovate Energy Solutions

Double-glass component glass transmittance



Overview

Understanding the thermal performance of window units is of utmost importance for the advancement of energy-efficient building design. Thermal transmittance (U-factor) is one of the most important indicators.

Can transmittance spectrograms be used to determine optical properties of single glazing units?

In this work, transmittance spectrograms of single glazing units at normal incidence were only measured, and a novel spectroscopic method was developed to determine the optical properties of single and double glazing units based on the transmittance spectra modeling.

What is the effect of transmittance measurements on the performance of glazing?

Transmittance measurements performed only on the center of glazing lead to incorrect results, which can seriously affect the performances of the glazing system. A light transmittance reduction of 10% at 40° was found.

What are spectral transmittance, reflectance and absorptance of glazing units?

T , R and A is spectral transmittance, reflectance and absorptance of the glazing unit, respectively. $\Delta\lambda$ is wavelength interval. S_{λ} $\Delta\lambda$ values at different wavelengths are given in ISO9050 (2003). Table 2 gives solar-weighted transmittance, reflectance and absorptance of glazing units in the wavelength 337–900 nm and in Jelle (2013).

How do you calculate reflectance, transmittance & absorptance of a double glazing unit?

The reflectance, transmittance and absorptance of a double glazing unit at normal incidence are given as (Dong et al., 2013a) (4a) $R_d = R_{s1} + T_{s2} T_{s1} - R_{s2}$ (4b) $T_d = T_{s2} T_{s1} - R_{s2}$ (4c) $A_d = 1 - R_d - T_d$ where R_d , T_d and A_d are the reflectance, transmittance and absorptance of a double glazing unit at normal incidence, respectively.

What is the difference between double glazing and single glazing?

The transmittance of double glazing units is smaller than that of single glazing units in the same glass thickness, while the reflectance and absorptance of double glazing units is more than that of single glazing units.

Are double glazing units homogenous and non scattering?

Assumptions for the mathematical model have been listed as follows: (1) The single glazing unit are homogenous and non scattering. (2) As the absorptance of air in the double glazing unit is very weak, the intervention of the air on the radiative interactions with glazing unit is neglected.

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