A-Core Container

Double-glass transmittance of components

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.

What is thermal transmittance of glazing?

1. Introduction The thermal transmittance, or U value, of glazing is the rate of heat transfer under steady state conditions from the air on one side of the glazing to the air on the other side for unit area and for unit temperature difference. The reciprocal of the thermal transmittance is the overall thermal resistance.

What is the relationship between transmittance and emissivity of glass panes?

Transmittance for solar radiation plays an important role in determining total solar transmittance and solar gain. The correlation between transmittance and emissivity of glass panes is shown in Figure 4, first column, second row. Panes with and without low-emissivity coating can be clearly distinguished from each other.

What are the components of a double glazed window?

The outside glass layer, the hollow layer, and the inner glass layer all contribute to the heat transmission in double-glazing systems. The solar rays that reach the glazing surface are divided into three components Fig. 2. Schematic of double-glazed window.

How is the transmittance of optical glass measured?

The transmittance of optical glass is measured using double beam spectral photometers from the company Perkin Elmer with special modifications. The standard setup enables to measure within a wavelength region from 250 nm up to 2500 nm. The measurement accuracy over the complete spectrum is about ±0.5%.

How do you calculate the thermal transmittance of a multiple glazing unit?

The thermal transmittance of a multiple glazing unit is given by the following equation : (1) U= 1 1 h e + 1 h t + 1 h i where U is the thermal transmittance (W/m 2 K), he and hi are the external and internal heat transfer coefficients (W/m 2 K), respectively, and ht is the conductance of the multiple glazing unit (W/m 2 K).

How does electromagnetic radiation affect the transmittance of a glass?

Electromagnetic radiation influences the transmittance of a glass depending on glass type and the wavelength of radiation. The influence of visible and UV radiation (less than 380 nm wavelength) on glass is called solarization. The UV radiation generates color-centers in the glass leading to a reduced transmittance.

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