



**CANADA'S GREEN PLAN
LE PLAN VERT DU CANADA**

**Measurement of SHGC
and U-Value of
Windows with Insect Screens**

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The CANMET Energy Technology Centre (CETC)
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ABSTRACT

Energy ratings are currently being used in a number of countries to assist in the selection of windows and doors based on energy performance. Developed for simple comparison purposes, these rating numbers do not take into account window removable attachments such as insect screens that are, nevertheless, widely used. Research was carried out to assess the effects of insect screens on the heat gains and losses of windows. The work reported in this paper deals with the effect of one screen type on the performance of a base case, double-glazed window. Using an indoor solar simulator facility, measurements of the window Solar Heat Gain Coefficient (SHGC) and U-value were made for different screen attachment configurations and climatic conditions. Results with the sample window tested indicate that insect screens placed on the outdoor side can reduce its SHGC by 46% with only a 7% reduction in its U-value ($0.19 \text{ W/m}^2\text{°C}$), and that insect screens placed on the indoor side can reduce its SHGC by 15% while reducing its U-value by 14% ($0.38 \text{ W/m}^2\text{°C}$).

RÉSUMÉ

Un certain nombre de pays se servent actuellement de cotation énergétique pour aider à la sélection de fenêtres et portes selon leur performance énergétique. Ces systèmes de cotation énergétique ont été créés pour permettre une comparaison simplifiée et ne tiennent donc pas en compte les options amovibles des fenêtres telles que les moustiquaires, pourtant d'un usage extrêmement courant. Il est donc d'intérêt d'évaluer les effets de la moustiquaire sur les gains et pertes de chaleur de la fenêtre. Le travail de recherche présenté ici porte sur les effets d'un type de moustiquaire apposée sur une fenêtre de base à double vitrage clair. Des mesures du coefficient de gains solaires et de la valeur U de la fenêtre ont été effectuées dans un simulateur solaire, portant sur différentes positions de la moustiquaire et conditions climatiques. Dans le cas de la fenêtre choisie, les résultats indiquent que lorsque la moustiquaire est placée du côté extérieur, le coefficient de gains solaires peut baisser de 46% avec une réduction mineure de la la valeur U de 7% ($0.19 \text{ W/m}^2\text{°C}$); si l'on place la moustiquaire du côté intérieur, le coefficient de gains solaires est réduit de 15% accompagné d'une baisse de la valeur U de 14% ($0.38 \text{ W/m}^2\text{°C}$).

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