



**CSA A440.2:22/  
CSA A440.3:22**  
National Standard of Canada



# Fenestration energy performance / User Guide to CSA A440.2:22, Fenestration energy performance



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# Preface

This is the eighth edition of CSA A440.2/CSA A440.3, *Fenestration energy performance/User guide to CSA A440.2:22, Fenestration energy performance*. It supersedes the previous editions published in 2019, 2014, and 2009 under the title *Fenestration energy performance/User guide to CSA A440.2* and in 2004, 1998, 1993, and 1991 under the title *Energy performance of windows and other fenestration systems (and associated user guides)*.

The major changes to this edition include revisions to the condensation section as follows:

- the Temperature Index (*I*) has been updated and the Condensation Index (*CI*) has been added;
- the Temperature Index (*I*) is obtained through measurement and the Condensation Index (*CI*) is obtained through modelling; and
- the thermocouple placement figures have been updated.

CSA A440.2 applies to the determination of energy performance properties for a variety of fenestration systems, including fixed windows, operable windows, sliding glass doors, hinged doors, skylights with flat glazings, and curtain walls. It includes the following energy performance properties, which are applicable to all building types (residential, commercial, and other):

- overall coefficient of heat transfer (U-factor);
- solar heat gain coefficient (*SHGC*); and
- visible transmittance (*VT*).

These properties can be evaluated using either computer simulation or measurement.

In addition, CSA A440.2 provides a means for determining a comparative Energy Rating (*ER*) for fixed and operable windows, sliding doors, and hinged doors to be used in low-rise residential housing. The *ER* combines the U-factor, *SHGC*, and heat losses resulting from air leakage into a single rating that allows the energy performance of fixed and operable windows, sliding doors, and hinged doors to be compared over an average heating season. Assumptions have been made about the size of the fixed and operable windows, sliding doors, and hinged doors in order to develop the *ER*.

Annex B provides some information on how climate change can affect fenestration product design and application.

CSA A440.3, the user guide to CSA A440.2, has been prepared to explain the content and use of CSA A440.2. CSA A440.3 allows the knowledgeable user to develop specific energy performance properties that apply to fenestration systems of different sizes in specific geographic locations and orientations. CSA A440.3 is divided into three parts. In Section I, the energy performance of fenestration systems is discussed in general terms to provide an overview of the issues that should be considered in the selection of fenestration systems. Section I also explains some of the content of CSA A440.2. In Section II, technical explanations are provided for specific clauses of CSA A440.2. In Section III, the concepts of Specific Energy Rating (*ERS*) and Energy Rating for the cooling season (*ERC*) are explained for more advanced users.

CSA A440.2 is considered suitable for use for conformity assessment within the stated scope of the Standard.

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