

Vancouver Building By-Law

USI 1.40 Window and Glass Door requirement for 1 and 2 family homes

Frequently Asked Questions

Windows

Q1. What Windows are covered by the USI 1.4 requirement?

A1. All windows are covered by the USI 1.4 or lower requirement in new homes. This includes factory glazed windows as well as site-glazed and commercial product types, and all window operating types (Fixed, Casement, Double Hung, Sliders, etc.).

Q2. Do I have to install a triple glazed window?

A2. No, not necessarily. The requirement of USI 1.4 can be achieved by some manufacturers with double glazing with specific coatings but many will need triple glazing to achieve the U-value.

Q3. What about new work in existing homes? If I am building an extension or renovation with windows, do they have to meet USI 1.4?

A3. Yes, new work must comply with the VBBL. The only exception is in heritage designated homes; in that case the USI value does not need to be achieved.

Q4. I am planning to use a commercial glazing product without a labeled and certified U-value. How can I comply?

A4. You need to hire an engineer or architect trained to perform the energy simulation using for the product in question using the “flexibility provision” in A-10.2.2.2. If you are planning to use a commercial glazing product you will need to have an engineer perform a U-value calculation by using the flexibility provision in the BC Energy Efficiency Act. As permitted by the act the product may be simulated or tested by the professional (Professional engineer or architect) at the reference size in the NFRC 100 or CSA standards, or at the actual installed size. If only one window is in question, and that one window can be shown to have a USI no greater than 1.4, a simulation report for the single window is sufficient. If the window has a USI greater than 1.4, averaging the performance of that window with better performing products as permitted by the flexibility provision is also permitted. The signed and dated written energy performance certification letter accompanied by supporting documentation to establish that the average overall U-value of all the fenestration products in the home regulated is not greater than 1.4 W/(m² x K). For more detail see the flexibility provision in the VBBL A-10.2.2.2 of the 2014 VBBL or in the BC energy efficiency act.

The energy performance certification letter should include the following:

1. A cover letter on the professional’s letterhead that includes:
 - a. The professional’s identity and contact information.
 - b. The physical and legal addresses of the building.
 - c. The area weighted overall average U-value of all the fenestration in the building.
 - d. An attestation by the professional that he/she has verified that the information provided in the energy performance certification and accompanying documentation reports the overall average U-value of the products installed at the building.
 - e. The name, address and contact information of the fenestration product supplier(s).

- f. The name, address and contact information of the glass supplier(s) (if different from the fenestration product supplier).
 - g. The name, address and contact information of the individual(s) or firm(s) that performed the energy performance simulations (if different from the professional).
 - h. A complete list of the supporting documentation attached to the letter.
 - i. The professional's seal and signature.
2. An attached documentation package that includes:
- a. A list of each fenestration product type, quantity, size, area, description, and NFRC 100-2010/CSA A440.2-09 U-value.
 - b. The sizes and configurations of the simulated products as shown by frame elevations and/or shop drawings, keyed to the list.
 - c. A table of the area-weighting calculations performed to determine the overall average U-value.
 - d. A description of each framing system used, including manufacturer name, series, and model numbers, as well as frame material and any internal reinforcing used.
 - e. A complete description of the glazing, including overall glass thickness, number of panes, pane thicknesses, gap width(s), low-E coating manufacturer and type, low-E coating emissivity, and surfaces to which coatings are applied, type of gap fill with percentage(s) of inert gas, complete description of spacer by make, series, and model, and its constituent materials, and insulating glass edge sealant materials.
 - f. Isotherms for each unique framing member used in each system covered by the letter (heads, sills, jambs, mullions).

Q5. Do all windows have to be labeled?

A5. All factory glazed windows have to be labeled with certified U-value labels as required by the BC Energy Efficiency Act. Products must also be labeled to show their tested NAFS ratings for air-water-structural performance. U-value labels are typically separate from NAFS labels. Site labeling is not permitted for factory glazed windows.

Site glazed and commercial windows must comply using the flexibility provision.

Q7. What about glass block?

A7. Glass block needs to be taken into account in the Hot2000 model but is not regulated for energy performance.

Q8. Can the U-values shown on product labels be rounded to one decimal place for code compliance?

A8. The Bylaw specifies U-values to one decimal place of precision and allows a maximum USI 1.4 for windows and glass doors, and USI 2.4 for skylights and sloped glazing. You can round labeled U-values with two decimals to one decimal for compliance to the bylaw. For example USI values up to 1.44 will be

accepted as complying with $USI \leq 1.4$ as specified in the VBBL. U-values of 1.45 or greater will round up to 1.5 and so will not be accepted.

Q9. For Skylights what is the required U value?

A9. A U value of 2.4 or lower is required for skylights.

Q10. For Roof Access Hatches (sometimes called acrylic roof access skylights) what U value is required?

A10. A U value of 2.9 or lower is required for Roof Attic Hatches.

Doors

Q1. Do sliding glass doors have to meet the USI 1.4 requirement?

A1. Yes, all sliding glass doors (including lift and slide doors) are required to meet USI 1.4.

Q2. Do side-hinged doors, with or without sidelites and transoms, have to meet the USI 1.4 requirement?

A2. No, side-hinged doors (single doors or pairs, with or without side lites or transoms) must have certified U-value labels to show they are in compliance with the BC maximum USI of 1.8.

Q3. Do folding glass doors have to meet the USI 1.4 requirement?

A3. Yes, folding glass doors must meet the USI 1.4 requirement.

Q4. What is the U-value required for unglazed, fully glazed and partially glazed side hinged doors,?

A4. Unglazed, partially glazed, and fully glazed side hinged doors must be in compliance with the BC Building Code requirement that permits a maximum labeled USI of 1.8. (A partially glazed door has one or more sashes containing glass lites smaller than the maximum possible size for the type of slab or sash construction.)

Q5. For door transoms and sidelights within the same rough opening what is the U value required?

A5. Transoms and sidelights in the same manufactured assembly and in a single rough opening must be in compliance with the BC maximum USI of 1.8. If there is a transom, sidelight or window in a separate rough opening next to the door then the transom, sidelight or window must have a maximum USI of 1.4.

Q6. Are any doors exempt from the U-value requirement?

A6. One primary entrance door (single leaf or pair) is exempt from the U-value requirement. So if a project wants to use a wood entry door or other unique entry door then that door does not need to be labeled. If the project wants to use more than one product unlabeled for U-value product then the flexibility provision must be used with an engineer performing the required calculation.

Q7. Where are window and door U values heading in the future for Part 9 residential?

A7. The City of Vancouver will have improved U-value requirements with future code updates. In the future all windows and doors will need to improve to reduce heat loss. Right now the requirement for windows and glass doors is a U-value of 1.4 the next iteration will move towards a U-value of 1.2 which is the next zone in Energy Star and is available from a range of local producers. Manufacturers wanting to sell to Vancouver projects will find it worthwhile to invest in improving the energy performance of their products.

Definitions:

Glass door: a door having one or more sashes containing glass lites of the maximum possible size for the type of slab or sash construction.

Partially glazed door: a door having one or more sashes containing glass lites smaller than the maximum possible size for the type of slab or sash construction.