Chapter 10: Default Heat Loss Coefficients

Building component heat loss coefficients are used extensively when complying with either the **Component Performance** or **System Analysis Approach**. The **Prescriptive Approach** only utilizes heat loss coefficients for doors, windows and skylights.

The *Washington State Energy Code* (WSEC) Chapter 10 lists default heat loss coefficients for hundreds of building assemblies. Heat loss coefficients are listed as default **F-factors** for slabs and default **U-factors** for most other components.

The WSEC Chapter 10 default heat loss coefficients for **windows**, **skylights** and **doors** should only be used when the product manufacturer or dealer cannot provide you with National Fenestration Rating Council (NFRC) tested U-factors. In most cases it will be to your advantage to contact the manufacturer to obtain NFRC tested U-factors before submitting your application for a building permit.

Component Descriptions

To assure you select the correct heat loss coefficient, it is important to read the description of the component that precedes each table. The heat loss coefficient will vary based on the construction method. Examples of construction details that will change the heat loss coefficient include framing style, siding type, slope of attic, insulation type and insulation location. The illustrations used in earlier chapters of this guide will help you visualize the written descriptions.

What to Do If a Building System is Not Listed in WSEC Chapter 10

[104] WSEC requires that plans and specifications be submitted to the building official with all the needed supporting data.

This could include detailed U-factor calculation for building systems not detailed in the Chapter 10 default heat

loss coefficients. Heat loss coefficients should be calculated using the methods detailed in the *ASHRAE Handbook of Fundamentals*.

Manufacturers of pre-fabricated building assemblies may have engineering staff available that will provide the required calculations.

Links to WSEC Chapter 10 Default Heat Loss Coefficients

Table 10-1: Default Wall U-Factors and Slab F-Factors for Basements

Table 10-2: Default F-Factors for On-Grade Slabs

Table 10-3: Default U-Factors for Floors Over Vented Crawlspace or Unheated Basement

Table 10-4: Default U-Factors for Floors Over Heated Plenum Crawlspaces

Table 10-4A: Default U-Factors for Exposed Floors

Table 10-5: Default U-Factors for Above-Grade Walls

- 2 x 4 Single Wood Stud: R-11 Batt
- 2 x 4 Single Wood Stud: R-13 Batt
- 2 x 4 Single Wood Stud: R-15 Batt
- 2 x 6 Single Wood Stud: R-19 Batt
- 2 x 6 Single Wood Stud: R-21 Batt
- 2 x 6 Single Wood Stud: R-22 Batt
- 2 x 6 Single Wood Stud: Two R-11 Batts
- 2 x 8 Single Stud: R-25 Batt
- 2 x 6: Strap Wall
- 2 x 6 + 2 x 4: Double Wood Stud
- 2 x 4 + 2 x 4: Double Wood Stud
- Log Walls
- Stress Skin Panel

Table 10-5A: Default U-Factors for Overall Assembly Metal Stud Walls

Table 10-5B: Default U-Factors for Concrete and Masonry Walls

- 12-inch Concrete Masonry
- 8-inch Clay Brick
- 6-inch Concrete Poured Or Precast

Table 10-6: Other Than Group R Occupancy: Default U-Factors for Vertical Glazing, Overhead Glazing and Opaque Doors

- Vertical Glazing
- Overhead Glazing
- Opaque Doors

Table 10-6A: Group R Occupancy: Default U-Factors for Vertical Glazing

Table 10-6B: Group R Occupancy: Default U-Factors for Vertical Glazing for Small Businesses

Table 10-6C: Group R Occupancy: Default U-Factors for Doors

- Revolving Doors (Rough Opening: 82 in. x 84 in.)
- Sectional Overhead Doors (Nominal: 10 ft. x 10 ft.)

Table 10-6D: Group R Occupancy: Default U-Factors for Glazed Doors

Table 10-6E: Group R Occupancy: Default U-Factors for Overhead Glazing

Table 10-7: Default U-Factors for Ceilings

Table 10-8: Assumed Effective Air Changes Per Hour

Table 10-8A: Default Heat Capacity/Density Product for Air

Table 10-9: Heat Capacity

Table 10-10: Default Mass Values