

# IECC

## Building Envelope Requirements: Fenestration

The International Building Code (IBC) mandates that buildings be designed and constructed in accordance with the International Energy Conservation Code (IECC). The following tables specify the building envelope requirements with regard to fenestration for the following versions of IECC: 2006, 2009, 2012, and 2015. Reference **FIGURE C301.1** to determine the appropriate climate zone for your building.

### IECC - 2006 Table 502.3

Climate Zone	1	2	3	4 except Marine	5 and Marine 4	6	7	8
<b>Vertical Fenestration (40% maximum above-grade wall)</b>								
<b>U-Factor</b>								
<b>Framing material other than metal or without metal reinforcement or cladding</b>								
U-Factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0.35
<b>Metal framing with or without thermal break</b>								
Curtain Wall/Storefront U-Factor	1.20	0.70	0.60	0.50	0.45	0.45	0.45	0.45
Entrance Door U-Factor	1.20	1.10	0.90	0.85	0.80	0.80	0.80	0.80
All Other U-Factor <sup>a</sup>	1.20	0.75	0.65	0.55	0.55	0.55	0.50	0.50
<b>SHGC - All Frame Types</b>								
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	NR	NR
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.33	NR	NR	NR	NR	NR
SHGC: PF ≥ 0.5	0.40	0.40	0.40	NR	NR	NR	NR	NR
<b>Skylights (3% maximum)</b>								
<b>Glass</b>								
U-Factor	1.60	1.05	0.90	0.60	0.60	0.60	0.60	0.60
SHGC	0.40	0.40	0.40	0.40	0.40	0.40	NR	NR
<b>Plastic</b>								
U-Factor	1.90	1.90	1.30	1.30	1.30	0.90	0.90	0.60
SHGC	0.35	0.35	0.35	0.62	0.62	0.62	NR	NR

NR = No Requirement

PF = Projection Factor (See Section 502.3.2)

a. All others includes operable windows, fixed windows, and non-entrance doors

# IECC - 2009 Table 502.3

Climate Zone	1	2	3	4 except Marine	5 and Marine 4	6	7	8
<b>Vertical Fenestration (40% maximum above-grade wall)</b>								
<b>U-Factor</b>								
<b>Framing material other than metal or without metal reinforcement or cladding</b>								
U-Factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0.35
<b>Metal framing with or without thermal break</b>								
Curtain Wall/Storefront U-Factor	1.20	0.70	0.60	0.50	0.45	0.45	0.40	0.40
Entrance Door U-Factor	1.20	1.10	0.90	0.85	0.80	0.80	0.80	0.80
All Other U-Factor <sup>a</sup>	1.20	0.75	0.65	0.55	0.55	0.55	0.45	0.45
<b>SHGC - All Frame Types</b>								
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.45	0.45
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.33	NR	NR	NR	NR	NR
SHGC: PF ≥ 0.5	0.40	0.40	0.40	NR	NR	NR	NR	NR
<b>Skylights (3% maximum)</b>								
U-Factor	0.75	0.75	0.65	0.60	0.60	0.60	0.60	0.60
SHGC	0.35	0.35	0.35	0.40	0.40	0.40	NR	NR

NR = No Requirement

PF = Projection Factor (See Section 502.3.2)

a. All others includes operable windows, fixed windows, and non-entrance doors

# IECC - 2012 Table 402.3

Climate Zone	1	2	3	4 except Marine	5 and Marine 4	6	7	8
<b>Vertical Fenestration</b>								
<b>U-Factor</b>								
Fixed Fenestration	0.50	0.50	0.46	0.38	0.38	0.36	0.29	0.29
Operable Fenestration	0.65	0.65	0.60	0.45	0.45	0.43	0.37	0.37
Entrance Doors	1.10	0.83	0.77	0.77	0.77	0.77	0.77	0.77
<b>SHGC</b>								
SHGC	0.25	0.25	0.25	0.40	0.40	0.40	0.45	0.45
<b>Skylights</b>								
<b>U-Factor</b>	0.75	0.65	0.55	0.50	0.50	0.50	0.50	0.50
<b>SHGC</b>	0.35	0.35	0.35	0.40	0.40	0.40	NR	NR

NR = No Requirement

PF = Projection Factor (See Section 502.3.2)

a. All others includes operable windows, fixed windows, and non-entrance doors

# IECC - 2015 Table C402.4

Climate Zone	1	2	3	4 except Marine	5 and Marine 4	6	7							
<b>Vertical Fenestration</b>														
<b>U-Factor</b>														
Fixed Fenestration	0.50	0.50	0.46	0.38	0.38	0.36	0.29							
Operable Fenestration	0.65	0.65	0.60	0.45	0.45	0.43	0.37							
Entrance Doors	1.10	0.83	0.77	0.77	0.77	0.77	0.77							
<b>SHGC</b>														
Orientation <sup>a</sup>	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N	SEW	N
PF < 0.2	0.25	0.33	0.25	0.33	0.25	0.33	0.40	0.53	0.40	0.53	0.40	0.53	0.45	NR
0.2 ≤ PF < 0.5	0.30	0.37	0.30	0.37	0.30	0.37	0.48	0.58	0.48	0.58	0.48	0.58	NR	NR
PF ≥ 0.5	0.40	0.40	0.40	0.40	0.40	0.40	0.64	0.64	0.64	0.64	0.64	0.64	NR	NR
<b>Skylights</b>														
<b>U-Factor</b>	0.75	0.65	0.55	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
<b>SHGC</b>	0.35	0.35	0.35	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	NR

NR = No Requirement

PF = Projection Factor

a. "N" indicates vertical fenestration oriented within 45 degrees of true north. "SEW" indicates orientation other than "N". For buildings in the southern hemisphere, reverse south and north. Buildings located at less than 23.5 degrees latitude shall use SEW for all orientations.

**FIGURE C301.1  
CLIMATE ZONES**

