2009 IECC Chapter 1

Additions, alterations, renovations or repairs.

Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition, comply with this code as a single building.

2009 IECC Chapter 1

Exceptions:

5. Reroofing for roofs where neither the sheathing nor the insulation are exposed. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[h]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	1.20	0.75	0.30	30	13	3 / 4	13	0	0	0
2	0.65[j]	0.75	0.30	30	13	4 / 6	13	0	0	0
3	0.50[j]	0.65	0.30	30	13	5 / 8	19	5/13[i]	0	5 / 13
4 except Marine	0.35	0.60	NR	38	13	5 / 10	19	10 / 13	10, 2 ft	10 / 13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5[g]	13 / 17	30[f]	10/13	10,2ft	10/13
6	0.35	0.60	NR	49	20 or 13+5[g]	15 / 19	30[f]	15/19	10,4ft	10/13
7 and 8	0.35	0.60	NR	49	21	19 / 21	38[f]	15/19	10,4ft	10/13

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2x6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 ft, whichever is less, in zones 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine zone.

f. Or insulation sufficient to fill the framing cavity, R-19 minimum.

g. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

h. The second R-value applies when more than half the insulation is on the interior of the mass wall.

i. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.

j. For impact rated fenestration complying with Section R301.2.1.2 of the IRC (or Section 1609.1.2 of the IBC), the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

2009 IECC Chapter 4 Prescriptive Table

- Above grade walls
  - R-20 in Climate Zones 5 and 6
  - Up from R-19

2009 IECC Chapter 4 Prescriptive Table

- Building Envelope – Floor
  - R-38 in Climate Zone 7 and 8
  - Up from R-30

2009 IECC Chapter 4 Prescriptive Table

- Building Envelope – Glazing Climate Zone 3 and 4 u-Factor

Now:
CZ-3 u-0.50
CZ-4 u-0.35

Was:
CZ-3 u-0.65
CZ-4 u-0.40

2009 IECC Chapter 4 Prescriptive Table

- New labeling requirements in I-Codes for fixed insulation
  - Compressing cotton, polyester, fiberglass, or mineral wool batts
    - Must have labeling on batt for compressed R-value
    - Currently information is on packaging material per FTC requirements

2009 IECC Chapter 4 Prescriptive

- Unlimited Cathedral Ceiling R-value
  - Exemption is now limited to 500 ft2 or 20% whichever is less

2009 IECC Chapter 4
New Path to Air Sealing

GENERAL DEFINITIONS

AIR BARRIER. Material(s) assembled and joined together to provide a barrier to air leakage through the building envelope. An air barrier may be a single material, or a combination of materials.

Air sealing and insulation. Building envelope air tightness and insulation installation shall be demonstrated to comply with one of the following options given by Section 402.4.2.1 or 402.4.2.2:

Testing option. Building envelope tightness and insulation installation shall be considered acceptable when tested air leakage is less than 7 ACH when tested with a blower door at a pressure of 50 Pascal's. Testing shall occur after rough in and after installation of penetrations of the building envelope, including penetrations for utilities, plumbing, electrical, ventilation, and combustion appliances.

During testing:
1.Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed;
2.Dampers shall be closed, but not sealed; including exhaust, intake, makeup air, back draft, and flue dampers;
3.Interior doors shall be open;
4.Exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5.Heating and cooling system(s) shall be turned off;
6.HVAC ducts shall not be sealed; and
7.Supply and return registers shall not be sealed.

Visual inspection option: Building envelope tightness and insulation installation shall be considered acceptable when the items listed in Table 402.4.2, applicable to the method of construction, are field verified. Where required by the code official, an approved party independent from the installer of the insulation, shall inspect the air barrier and insulation.

AIR BARRIER AND INSULATION INSPECTION

COMPONENT	CRITERIA
Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired. Air permeable insulation is not used as a sealing material. Air permeable insulation is inside of an air barrier.
Ceiling / attic	Air barrier in any dropped ceiling / soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jambs and framing is sealed.
Rim joists	Rim joists are insulated and include an air barrier.
Floors (including above garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawlspace walls	Insulation is permanently attached to walls. Exposed earth in unvented crawlspaces is covered with class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls, and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by spayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures are airtight, IC rated, and sealed to drywall. Exception--fixtures in conditioned space.
Plumbing and Wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower / tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical / phone box on exterior walls	Air barrier extends behind boxes or an air sealed type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

2009 IECC Definitions

VAPOR RETARDER CLASS. A measure of the ability of a material or assembly to limit the amount of moisture that passes through that material or assembly.

- Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E-96 as follows:
- Class I: 0.1 perm or less
- Class II: 0.1 < perm < 1.0 perm
- Class III: 1.0 < perm < 10 perm

2009 IECC Chapter 4 & 5

Material vapor retarder class. The vapor retarder class shall be based on the manufacturers certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

- Class I: Sheet polyethylene, non-perforated aluminum foil
- Class II: Kraft faced fiberglass batts or low perm paint (paint with 0.1 < perm < 1.0)
- Class III: Latex or enamel paint

2009 IECC Chapter 4 & 5

- **Class III vapor retarders.** Class III vapor retarders shall be permitted where any one of the conditions in Table 402.5.1?? are met.

2009 IECC Chapter 4 & 5

Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section vented cladding shall include the following minimum clear air spaces. Other openings with the equivalent vent area permitted.

1. Vinyl lap or horizontal aluminum siding applied over a weather-resistive barrier as specified in Table R703.4 of the *International Residential Code*.
2. Brick veneer with a clear airspace as specified in Section R703.7.4.2 of the *International Residential Code*.
3. Other approved vented claddings.

2009 IECC Chapter 4 & 5

- Taken from new table 402.5.1?? – Zone 5

- Vented cladding over OSB
- Vented cladding over Plywood Vented
- cladding over Fiberboard
- Vented cladding over Gypsum
- Insulated sheathing with R-value ≥ R5 over 2x4 wall
- Insulated sheathing with R-value ≥ R7.5 over 2x6 wall

2009 IECC Chapter 4

- Programmable Thermostat

2009 IECC Chapter 4

- Residential HVAC
  - Ducts in un-conditioned Space

2009 IECC Chapter 4

- Residential HVAC
  - Ducts in Conditioned Space

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2009 IECC Chapter 4

- Duct testing required for ducts located in un-conditioned space
- Post Construction
  - Leakage to outdoors 8 cfm per 100 sq. ft of floor area or
  - Total leakage of 12 cfm per 100 sq. ft. of floor area. Test pressure at 25 Pa including air handler

2009 IECC Chapter 4

- Duct testing required for ducts located in un-conditioned space
- Rough-in test
  - Total leakage of 6 cfm per 100 sq. ft. of floor area. Test pressure at 25 Pa and includes air handler.
  - No air handler at time of test– 4 cfm per 100 sq. ft. of floor area.

2009 IECC Chapter 4 & 5

Snow melt system controls.

Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50ºF and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40ºF.

2009 IECC Chapter 4

- **403.9 Pools.** Pools shall be provided with energy conserving measures in accordance with Sections 403.9.1 through 403.9.3
- **403.9.3 Pool covers.** Heated pools shall be equipped with a vapor-retardant pool cover on or at the water surface. Pools heated to more than 90 F (32 C) shall have a pool cover with a minimum insulation value of R-12.

2009 IECC Chapter 4
Lighting

- **HIGH-EFFICACY LAMPS.** Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:
- 60 lumens per watt for lamps over 40 watts,
- 50 lumens per watt for lamps over 15 watts to 40 watts,
- 40 lumens per watt for lamps 15 watts or less.

ELECTRICAL POWER AND LIGHTING SYSTEMS

Interior lighting power (Prescriptive). Lighting in spaces other than dwelling units, e.g. common areas, shall be high efficacy luminaires or shall comply with the interior lighting power requirements in Section 505.5

Exception: Dwelling units.

Lighting equipment. A minimum of fifty percent of the lamps in permanently installed lighting fixtures shall be high efficacy lamps.

2009 IECC Chapter 4

- Section 405 ?? Performance
- Residential HVAC
  - HVAC trade-off in performance path

2009 IECC Chapter 5

Application. The commercial building project shall comply with the requirements in Sections 502 (Building envelope), 503 (Building mechanical systems), 504 (Service water heating) and 505 (Lighting) in its entirety.

As an alternative, the commercial building project shall comply with the requirements of ASHRAE/IESNA 90.1 in its entirety.

2009 IECC Chapter 5

Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Tables 502.2(1) and 502.3 based on the climate zone specified in Chapter 3. Commercial buildings or portions of commercial buildings enclosing Group R occupancies shall use the R-values from the “Group R” column of Table 502.2(1). Commercial buildings or portions of commercial buildings enclosing occupancies other than Group R shall use the R-values from the “All Other” column of Table 502.2(1). Buildings with a vertical fenestration area or skylight area that exceeds that allowed in Table 502.3 shall comply with the building envelope provisions of ASHRAE/IESNA 90.1.

2009 IECC Chapter 5

- Minimum Efficiencies for Equipment have been up dated (Many have increased)
- Lighting has changed significantly

Total connected interior lighting power. The total connected interior lighting power (watts) shall be the sum of the watts of all interior lighting equipment as determined in accordance with Sections 505.5.1.1 through 505.5.1.4.

This section now has 20 exceptions including “Casino Gaming Areas”

Stay Tuned

That’s all for now