

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 1, Insert 1A[CE], Page 1 of 1
Insert between pages C-2 and C-3

SPS 363.0101 Administration and enforcement. The requirements in IECC sections C101 and C103 to C109 are not included as part of this chapter.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 2, Insert[CE], Page 1 of 1
Insert between pages C-6 and C-7

SPS 363.0202 General definitions.

(1) ADDITIONS. This is a department definition for this chapter in addition to the definitions in IECC section C202: “Effective aperture” or “EA” means for windows, the visible light transmittance times the window wall ratio per wall; and for sky lights, the well efficiency times the visible light transmittance times the sky light area times 0.85 divided by the gross exterior roof area.

(2) SUBSTITUTIONS. Substitute the following for the corresponding definitions listed in IECC section C202:

(a) “Approved” has the meaning given in s. SPS 362.0202 (2) (a).

(b) “Daylight responsive control” means a device or system that provides the automatic control of lamps and luminaires located in daylight zone only or a manual control of lamps or luminaires located in daylight zone only in such manner that at least 50% of the lamps are controlled in a reasonably uniform illumination pattern per IECC section C405.2.2.2, with the capability for the lamps to be operated at 100% or 0% of their design lighting capability.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 3, Insert 3A[CE], Page 1 of 1
 Insert between pages C-28 and C-29

SPS 363.0302 Exterior design conditions. These are department rules in addition to the requirements in IECC section C302: The exterior design temperatures used for heating and cooling load calculations shall be as specified under Table 363.0302.

Table 363.0302
Exterior Design Conditions

County	Winter	Summer		County	Winter	Summer	
	Design Temp (F)	Dry Bulb (OF)	Wet Bulb (OF)		Design Temp (F)	Dry Bulb (OF)	Wet Bulb (OF)
Adams	-20	87	75	Marathon	-20	87	75
Ashland	-25	86	70	Marinette	-20	87	75
Barron	-25	86	75	Marquette	-15	87	75
Bayfield	-25	86	70	Menominee	-20	87	75
Brown	-15	87	75	Milwaukee	-10	89	77
Buffalo	-20	87	75	Monroe	-20	87	75
Burnett	-25	86	75	Oconto	-20	87	75
Calumet	-15	87	75	Oneida	-25	86	75
Chippewa	-25	86	75	Outagamie	-15	87	75
Clark	-20	87	75	Ozaukee	-10	89	77
Columbia	-15	87	75	Pepin	-20	87	75
Crawford	-15	87	75	Pierce	-25	86	75
Dane	-15	87	75	Polk	-25	86	75
Dodge	-15	87	75	Portage	-20	87	75
Door	-15	87	75	Price	-25	86	75
Douglas	-25	86	70	Racine	-10	89	77
Dunn	-25	86	75	Richland	-15	87	75
Eau Claire	-20	87	75	Rock	-10	89	77
Florence	-25	86	75	Rusk	-25	86	75
Fond du Lac	-15	87	75	St. Croix	-25	86	75
Forest	-25	86	75	Sauk	-15	87	75
Grant	-15	87	75	Sawyer	-25	86	75
Green	-15	87	75	Shawano	-20	87	75
Green Lake	-15	87	75	Sheboygan	-15	87	75
Iowa	-15	87	75	Taylor	-25	86	75
Iron	-25	86	70	Trempealeau	-20	87	75
Jackson	-20	87	75	Vernon	-20	87	75
Jefferson	-10	89	77	Vilas	-25	86	75
Juneau	-20	87	75	Walworth	-10	89	77
Kenosha	-10	89	77	Washburn	-25	86	75
Kewaunee	-15	87	75	Washington	-10	89	77
La Crosse	-20	87	75	Waukesha	-10	89	77
Lafayette	-15	87	75	Waupaca	-20	87	75
Langlade	-20	87	75	Waushara	-15	87	75
Lincoln	-25	86	75	Winnebago	-15	87	75
Manitowoc	-15	87	75	Wood	-20	87	75

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 3, Insert 3B[CE], Page 1 of 1
Insert between pages C-28 and C-29

SPS 363.0303 Materials, systems and equipment. These are department rules in addition to the requirements in IECC section C303.

(1) GENERAL. Except as specified in sub. (2), when available, information on thermal properties, performance of building envelope sections, and components and heat transfer shall be obtained from ASHRAE Handbook of Fundamentals.

Note: Use of the ASHRAE Handbook of Fundamentals standard in effect at the time of publication of the 2015 IECC constitutes compliance with this section.

(2) EXCEPTIONS. (a) When the information is not available from ASHRAE Handbook of Fundamentals, the data shall be obtained from laboratory or field-test measurements. If laboratory or field test measurements are used for envelope heat transmission, the measurements shall be obtained using one of the following test methods:

1. ASTM C177-13, Test method by guarded hot plate apparatus
2. ASTM C335/335M-10, Test method of horizontal pipe insulation.
3. ASTM C518-15, Test method by means of the heat flow meter apparatus.
4. ASTM C1363-11, Test method by means of a hot box apparatus.

(b) For foam plastic insulation that incorporates a substance other than air as the insulating medium, laboratory or field tests shall be conducted on representative samples that have been aged for the equivalent of 5 years or until the R-Value has stabilized to determine thermal properties or performance. The tests shall be conducted by an independent third party.

(c) Integrally insulated concrete masonry systems within the scope of the National Concrete Masonry Association (NCMA) shall be evaluated for the thermal performance of the masonry or concrete units in accordance with one of the following:

- a. NCMA Evaluation Procedures for the Integrally-Insulated Concrete Masonry Walls.
- b. Default values as approved by the department.
- c. All other concrete or masonry units not within the scope of the NCMA Evaluation Procedures shall comply with one of the following methods for determining the thermal performance of the assembly or system:
 1. Default values as approved by the department.
 2. Laboratory or field-test measurements specified in par. (a).
 3. Department material approval process as specified in ch. SPS 361 to determine the U-factor.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4A[CE], Page 1 of 1
Insert between pages C-30 and C-31

SPS 363.0401 General application.

(1) ADDITIONAL REQUIREMENTS. This is a department rule in addition to the requirements in IECC section C401.2: All of the following rules shall apply regardless of whether the IECC chapter 4[CE] or ASHRAE 90.1 standard is used to determine compliance:

- (a)** Section SPS 363.0403 (1) relating to design loads.
- (b)** Section SPS 363.0403 (4) relating to economizers.
- (c)** Section SPS 363.0405 relating to lighting systems.
- (d)** IECC section C405.2.2.2 relating to dual switching.

(2) AUTOMATIC RECEPTACLE CONTROL. The requirements in ANSI/ASHRAE/IESNA 90.1–2013 section 8.4.2 are not included as part of this chapter.

(3) MONITORING. Substitute the following wording for ANSI/ASHRAE/IESNA 90.1–2013 section 8.4.3.1: A measurement device shall be installed in new buildings to monitor total electrical energy use. For buildings with tenants, total electrical energy shall be monitored for the total building or for each individual tenant.

(4) APPLICATION. Substitute the following wording for 2015 IECC section C401.2 condition 2: The requirements of sections C402 to C405.

(5) COMPLIANCE REQUIREMENTS. Substitute the following in IECC section C401.2 condition 3: The requirements of IECC sections C402.5, C403.2, C404, C405.2, C405.3, C405.4, C405.6, and C407. The building energy cost shall be equal to or less than the standard reference design building.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4B[CE], Page 1 of 1
Insert between pages C-30 and C-31

SPS 363.0402 Building envelope requirements.

(1) OPAQUE ASSEMBLIES. Substitute 2009 IECC Table 502.2 (1) for 2015 IECC Table C402.1.3 and renumber Table C402.1.3.

(2) OPAQUE ELEMENT MAXIMUM U-FACTORS. Substitute 2009 IECC Table 502.1.2 for 2015 IECC Table C402.1.4 and renumber Table C402.1.4.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4C[CE], Page 1 of 2
Insert between pages C-40 and C-41

SPS363.0403 Building mechanical systems.

(1) CALCULATION OF HEATING AND COOLING LOADS. The following wording is a department requirement in addition to the requirements in IECC section C403.2.1: Design heating and cooling loads shall be determined in accordance with s. SPS 363.0302 and Table 363.0302.

(2) EQUIPMENT AND SYSTEM SIZING. Substitute the following wording for the requirements and the exceptions in IECC section C403.2.2: Heating and cooling equipment and systems shall be sized to provide the minimum space and system loads calculated in accordance with s. SPS 363.0302.

(3) ECONOMIZERS SIMPLE HVAC SYSTEMS. Substitute the following wording for the requirements in IECC section C403.3: Supply air economizers shall be provided on the following cooling systems:

(a) All package roof top units.

(b) All other cooling systems $\geq 54,000$ Btu/h. Where a single room or space is supplied by multiple air systems, the aggregate cooling capacity of those systems shall be used in applying this requirement.

(4) ECONOMIZERS COOLING REQUIREMENTS. Substitute the following wording for the title of IECC Table C403.3 (1): MINIMUM BUILDING CHILLED WATER SYSTEM COOLING CAPACITY FOR DETERMINING ECONOMIZER COOLING REQUIREMENTS.

(5) CLIMATE ZONES 6 AND 7. Substitute the following wording for the requirements in IECC section C403.4.2.3.2.2: For climate zones 6 and 7 as indicated in IECC Figure C301.1 and Table C301.1, if an open-circuit cooling tower is used, then a separate heat exchanger shall be required to isolate the cooling tower from the heat pump loop, and heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop and providing an automatic valve to stop the flow of fluid.

(6) ZONE ISOLATION. The requirements in IECC section C403.2.4.4 are not included as part of chs. SPS 361 to 366.

(7) DEMAND CONTROLLED VENTILATION. Substitute the following for the wording, but not the exceptions, in IECC section 403.2.6.1: Demand control ventilation (DCV) is required for spaces larger than 40 people per 1000 sq. ft. (93 m²) of floor area (as established in IMC Table 403.3) and served by systems with one or more of the following:

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

(a) An air-side economizer.

(b) An automatic modulating control of the outdoor air damper.

(c) A design outdoor airflow greater than 3,000 cfm (1416L/s).

(8) PIPING INSULATION. (a) The requirements in IECC section C403.2.10 are not included as part of chs. SPS 361 to 366. Substitute 2009 IECC Table 503.2.8 for IECC Table C403.2.10.

(b) IECC section C403.2.10 exception 6 is not included as part of chs. SPS 361 to 366.

(9) MECHANICAL SYSTEMS COMMISSIONING. The requirements of IECC section C403.2.11 are not included as part of chs. SPS 361 to 366.

(10) WALK-IN COOLERS AND FREEZERS. The requirements in IECC sections C403.2.15 and C403.2.16 are not included as part of chs. SPS 361 to 366.

(11) BOILER TURNDOWN. The requirements in IECC section C403.4.2.5 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4D[CE], Page 1 of 1
Insert between pages C-68 and C-69

SPS 363.0404 Service water heating.

- (1) TIME SWITCHES.** The requirements in IECC section C404.9.2 are not included as part of this chapter.
- (2) HEAT TRAPS.** The requirements in IECC section C404.3 are not included as part of this chapter.
- (3) POOLS AND SPAS.** The requirements in IECC sections C404.9.2 and C404.9.3 are not included as part of this chapter.
- (4) CIRCULATION SYSTEMS.** Substitute the following wording for the requirements in IECC section C404.6.1: Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold-water supply pipe. Gravity and thermo-syphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall automatically turn off the pump when the water in the circulation loop is at the desired temperature.
- (5) SERVICE WATER-HEATING SYSTEM COMMISSIONING.** The requirements of IECC section C404.11 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4E[CE], Page 1 of 1
Insert between pages C-70 and C-71

SPS 363.0405 Lighting systems.

(1) CONTROLS. These are department rules in addition to the requirements in IECC section C405:

(a) General. Except as provided in par. (b), daylight zones in any interior enclosed space greater than 250 square feet and a lighting density more than 0.6 W/ft² shall have at least one control that meets all the following requirements:

1. Controls only luminaires in the daylight zones.
2. Controls at least 50% of the lamps or luminaires in the daylight zone, in a manner described in IECC section C405.2.3.

(b) Exceptions. The requirements of this subsection do not apply to any of the following:

(c) Daylight zones where the effective aperture of glazing is equal or less than 0.1 for vertical glazing and 0.01 for horizontal glazing.

(d) Daylight zones where existing adjacent structures or natural objects obstruct daylight to the extent that effective use of daylighting is not feasible.

(2) LINE-VOLTAGE LIGHTING TRACK AND PLUG-IN BUSWAY. Substitute the following for the requirements in IECC section C405: The wattage of line-voltage lighting track and plug-in busway which allows the addition or relocation of luminaires without altering the wiring of the system shall be the volt-ampere rating of the branch circuit feeding the luminaires or an integral current limiter controlling the luminaires, or the higher of the maximum re-lamping rated wattage of all of the luminaires included in the system, listed on a permanent factory installed label, or 30 W/linear foot.

(3) OCCUPANT SENSOR LIGHTING CONTROLS. **(a)** Substitute the following for the requirements, but not the exceptions, in IECC section C405.2: Lighting systems shall be provided with controls as specified in sections C405.2.2, C405.2.3, C405.2.4, and C405.2.5.

(4) (b) The requirements in IECC section C405.2.1 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4F[CE], Page 1 of 1
Insert between pages C-82 and C-83

SPS 363.0406 Requirements for additional efficiency package options. The requirements in IECC section C406 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4G[CE], Page 1 of 1
Insert between pages C-84 and C-85

SPS 363.0407 Total building performance.

(1) MANDATORY REQUIREMENTS. This is a department exception to the requirements in IBC section C407.2: The requirements in IECC section C403.2.7 are not required to be demonstrated as means of compliance with this section.

(2) TOTAL ENERGY PERFORMANCE. This is a department informational note to be used under IECC section C407: Note: Use of IECC section C407 requires the total building energy cost to be equal to or less than the standard reference design building, as required under IECC section C401.2 item 3. The 2015 IECC or ASHRAE 90.1–2013 options shall be selected.

(3) COMCHECK. This is a department informational note to be used under IECC section C407: Note: COMcheck is a computer program that may be used only for determining building envelope or lighting compliance. The COMcheck computer program may be downloaded at: <http://www.energycodes.gov/>. The most recent version of COMcheck shall be used to demonstrate code compliance. The 2015 IECC or ASHRAE 90.1–2013 options shall be selected.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4H[CE], Page 1 of 1
Insert between pages C-90 and C-91

SPS 363.0408 System commissioning. The requirements of IECC section C408 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 5, Insert 5A[CE], Page 1 of 1
Insert between pages C-94 and C-95

SPS 363.0502 Additions.

(1) OPAQUE ASSEMBLIES. Substitute 2009 IECC Table 502.2 (1) for 2015 IECC Table C402.1.3 and renumber Table C402.1.3.

(2) OPAQUE ELEMENT MAXIMUM U-FACTORS. Substitute 2009 IECC Table 502.1.2 for 2015 IECC Table C402.1.4 and renumber Table C402.1.4.

(3) AIR LEAKAGE. Substitute the wording from 2009 IECC sections 402.4.1, 402.4.2, 402.4.2.1 and 402.4.2.2 for IECC section C402.5, C402.5.1, C402.5.1.1, and C402.5.2.

(4) AIR BARRIER AND INSULATION INSPECTION COMPONENT TABLE. Substitute 2009 IECC Table 402.4.2 for IECC Table C402.5.1.2, C402.5.1.2.1, and C402.5.1.2.2.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 5, Insert 5B[CE], Page 1 of 1
Insert between pages C-96 and C-97

SPS 363.0503 Alterations.

(1) OPAQUE ASSEMBLIES. Substitute 2009 IECC Table 502.2 (1) for 2015 IECC Table C402.1.3 and renumber Table C402.1.3.

(2) Note: Use of the ASHRAE Handbook of Fundamentals standard in effect at the time of publication of the 2015 IECC constitutes compliance with this section.

(3) OPAQUE ELEMENT MAXIMUM U-FACTORS. Substitute 2009 IECC Table 502.1.2 for 2015 IECC Table C402.1.4 and renumber Table C402.1.4.

(4) AIR LEAKAGE. Substitute the wording from 2009 IECC sections 402.4.1, 402.4.2, 402.4.2.1 and 402.4.2.2 for IECC section C402.5, C402.5.1, C402.5.1.1, and C402.5.2.

(5) AIR BARRIER AND INSULATION INSPECTION COMPONENT TABLE. Substitute 2009 IECC Table 402.4.2 for IECC Table C402.5.1.2, C402.5.1.2.1, and C402.5.1.2.2.

(6) LIGHTING ALTERATIONS. Substitute the following wording for the exception in IECC section C503.6: Alterations that replace less than 50 percent of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 6, Insert 6A[CE], Page 1 of 1
Insert between pages C-98 and C-99

SPS 363.0600 Referenced standards. This is a department rule in addition to the requirements in IECC chapter 6[CE]: The following standards are incorporated by reference into chs. SPS 361 to 366:

(1) ASTM C177–13, Test method for steady–state heat flux measurements and thermal transmission properties by means of the guarded–hot–plate apparatus.

(2) ASTM C335/335M–10, Test method for steady state heat transfer properties of horizontal pipe insulation.

(3) ASTM 518–15, Test method for steady–state thermal transmission properties by means of the heat flow meter apparatus.

(4) ASTM C1363–11, Test method for thermal performance of materials and envelope assemblies by means of a hot box apparatus.

(5) National Concrete Masonry Association (NCMA) Evaluation Procedures of Integrally Insulated Concrete Masonry Walls, January 1, 1999.

Note: ASTM standards may be purchased from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

NCMA Evaluation Procedures may be obtained from the National Concrete Masonry Association, 2302 Horse Pen Road, Herndon, VA 20171–3499.

Copies of the standards adopted under this section are on file in the offices of the department, the legislative reference bureau.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 1, Insert 1A[RE], Page 1 of 1
Insert between pages R-2 and R-3

SPS 363.5101 Administration and enforcement. The requirements in IECC sections R101 and R103 to R109 are not included as part of this chapter.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 2, Insert 2A[RE], Page 1 of 1
Insert between pages R-6 and R-7

SPS 363.5202 Substitutions. Substitute the following definition for the corresponding definition listed in IECC section R202: “Approved” has the meaning given in s. SPS 362.0202 (2) (a).

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 3, Insert 3A[RE], Page 1 of 1
Insert between pages R-26 and R-27

SPS 363.5302 Exterior design conditions. These are department rules in addition to the requirements in IECC section R302: The exterior design temperatures used for heating and cooling load calculations shall be as specified in SPS Table 363.0302.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 3, Insert 3B[RE], Page 1 of 1
Insert between pages R-26 and R-27

SPS 363.5303 Materials, systems, and equipment. These are department rules in addition to the requirements in IECC section R303:

(1) GENERAL. Except as specified in sub. (2), when available, information on thermal properties, performance of building envelope sections, and components and heat transfer shall be obtained from ASHRAE Handbook of Fundamentals.

Note: Use of the ASHRAE Handbook of Fundamentals standard in effect at the time of publication of the 2015 IECC constitutes compliance with this section.

(2) EXCEPTIONS.

(a) When the information is not available from ASHRAE Handbook of Fundamentals, the data shall be obtained from laboratory or field-test measurements. If laboratory or field test measurements are used for envelope heat transmission, the measurements shall be obtained using one of the following test methods:

1. ASTM C177-13, Test method by guarded hot plate apparatus.
2. ASTM C335/335M-10, Test method of horizontal pipe insulation.
3. ASTM C518-15, Test method by means of the heat flow meter apparatus.
4. ASTM C1363-11, Test method by means of a hot box apparatus.

(b) For foam plastic insulation that incorporates a substance other than air as the insulating medium, laboratory or field tests shall be conducted on representative samples that have been aged for the equivalent of 5 years or until the R-Value has stabilized to determine thermal properties or performance. The tests shall be conducted by an independent third party.

(c) Integrally insulated concrete masonry systems within the scope of the National Concrete Masonry Association (NCMA) shall be evaluated for the thermal performance of the masonry or concrete units in accordance with one of the following:

1. NCMA Evaluation Procedures for the Integrally-Insulated Concrete Masonry Walls.
2. Default values as approved by the department.

(d) All other concrete or masonry units not within the scope of the NCMA Evaluation Procedures shall comply with one of the following methods for determining the thermal performance of the assembly or system:

1. Default values as approved by the department.
2. Laboratory or field-test measurements specified in par. (a).
3. Department material approval process as specified in ch. SPS 361 to determine the U-factor.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4C[RE], Page 1 of 1
Insert between pages R-28 and R-29

SPS 363.5401 Certificate. The requirements in IECC section R401.3 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4D[RE], Page 1 of 1
Insert between pages R-28 and R-29

SPS 363.5402 Building envelope requirements.

(1) INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT. Substitute 2009 IECC Table 402.1.1 for 2015 IECC Table R402.1.2 and renumber Table R402.1.2.

(2) EQUIVALENT U-FACTORS. Substitute 2009 IECC Table

(3) 402.1.3 for 2015 IECC Table R402.1.4 and renumber Table R402.1.4.

(4) AIR LEAKAGE. Substitute the wording from 2009 IECC sections 402.4.1, 402.4.2, 402.4.2.1, and 402.4.2.2 for IECC sections R402.4, R402.4.1, R402.4.1.1, and R402.4.1.2.

(5) AIR BARRIER AND INSULATION INSPECTION COMPONENT TABLE. Substitute 2009 IECC Table 402.4.2 for 2015 IECC Table R402.4.1.1.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4E[RE], Page 1 of 1
Insert between pages R-34 and R-35

SPS 363.5403 Systems.

(1) ELECTRICAL POWER AND LIGHTING. This is a department rule in addition to the requirements in IECC section R403: In residential buildings having individual dwelling units, provisions shall be made to determine the electrical energy consumed by each tenant by separately metering individual dwelling units.

(2) DUCTS. Substitute the following wording for the requirements in IECC section R403.3.2: All ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with IMC section 603.9.

(3) PROTECTION OF PIPING INSULATION IN RESIDENTIAL BUILDINGS. The requirements in IECC section R403.4.1 are not included as part of chs. SPS 361 to 366.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4F[RE], Page 1 of 1
Insert between pages R-36 and R-37

SPS 363.5404 Lighting equipment. Substitute the following wording for the requirements, but not the exception, in IECC section R404.1: A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high–efficacy lamps.

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 4, Insert 4G[RE], Page 1 of 1
Insert between pages R-36 and R-37

SPS 363.5405 Calculation software tools. This is a department informational note to be used under IECC section R405.6: Note: The federal Department of Energy has developed REScheck™, a computer program that may be used in demonstrating compliance for a residential building which has no more than 3 stories above grade and has 3 or more dwelling units. The REScheck program may be downloaded at <http://www.energy-codes.gov>. The most recent version of REScheck shall be used to determine code compliance. When using the program, the applicable code must be defined as the “2015 IECC.”

Insert pages for May 1, 2018 Wisconsin Commercial Building Code, SPS 361 – SPS 366, into the International Energy Conservation Code, 2015 Edition

Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 5, Insert 5A[RE], Page 1 of 1
Insert between pages R-42 and R-43

SPS 363.5502 Additions.

(1) INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT. Substitute 2009 IECC Table 402.1.1 for 2015 IECC Table R402.1.2 and renumber Table R402.1.2.

(2) EQUIVALENT U-FACTORS. Substitute 2009 IECC Table 402.1.3 for 2015 IECC Table R402.1.4 and renumber Table R402.1.4.

(3) AIR LEAKAGE. Substitute the wording from 2009 IECC sections 402.4.1, 402.4.2, 402.4.2.1, and 402.4.2.2 for IECC sections R402.4.0, R402.4.1, R402.4.1.1, and R402.4.1.2.

(4) AIR BARRIER AND INSULATION INSPECTION COMPONENT TABLE. Substitute 2009 IECC Table 402.4.2 for 2015 IECC Table R402.4.1.1.

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Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 5, Insert 5B[RE], Page 1 of 1
Insert between pages R-44 and R-45

SPS 363.5503 Alterations.

(1) INSULATION AND PENETRATION REQUIREMENTS BY COMPONENT. Substitute 2009 IECC Table 402.1.1 for 2015 IECC Table R402.1.2 and renumber Table R402.1.2.

(2) EQUIVALENT U-FACTORS. Substitute 2009 IECC Table 402.1.3 for 2015 IECC Table R402.1.4 and renumber Table R402.1.4.

(3) AIR LEAKAGE. Substitute the wording from 2009 IECC sections 402.4.1, 402.4.2, 402.4.2.1, and 402.4.2.2 for IECC sections R402.4.0, R402.4.1, R402.4.1.1, and R402.4.1.2.

(4) AIR BARRIER AND INSULATION INSPECTION COMPONENT TABLE. Substitute 2009 IECC Table 402.4.2 for 2015 IECC Table R402.4.1.1.

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Wisconsin Department of Safety and Professional Services- Division of Industry Services

IECC Chapter 6, Insert 6A[RE], Page 1 of 1
Insert between pages R-44 and R-45

SPS 363.5600 Referenced standards. This is a department rule in addition to the requirements in IECC chapter 6[RE]: The following standards are incorporated by reference into chs. SPS 361 to 366:

(1) ASTM C177–13, Test method for steady–state heat flux measurements and thermal transmission properties by means of the guarded–hot–plate apparatus.

(2) ASTM C335/335M–10, Test method for steady state heat transfer properties of horizontal pipe insulation.

(3) ASTM C518–15, Test method for steady–state thermal transmission properties by means of the heat flow meter apparatus.

(4) ASTM C1363–11, Test method for thermal performance of materials and envelope assemblies by means of a hot box apparatus.