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U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024, 202-586-2945, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays, or go to: http://www1.eere.energy.gov/buildings/appliance_standards/. Standards can be obtained from the sources listed below.

(b) *AHRI*. Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201, (703) 600-0366, or <http://www.ahrinet.org>.

(1) AHRI 1250 (I-P)-2009, ("AHRI 1250"), 2009 Standard for Performance Rating of Walk-In Coolers and Freezers, approved 2009, IBR approved for § 431.304.

(2) [Reserved]

(c) *ASTM*. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, (610) 832-9500, or <http://www.astm.org>.

(1) ASTM C518-04 ("ASTM C518"), Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus, approved May 1, 2004, IBR approved for § 431.304 and appendix A to subpart R of part 431.

(2) ASTM C1363-05, ("ASTM C1363"), Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus, approved May 1, 2005, IBR approved for appendix A to subpart R of part 431.

(d) *CEN*. European Committee for Standardization (French: Norme or German: Norm), Avenue Marnix 17, B-1000 Brussels, Belgium, Tel: + 32 2 550 08 11, Fax: + 32 2 550 08 19 or <http://www.cen.eu/>.

(1) DIN EN 13164:2009-02, ("DIN EN 13164"), Thermal insulation products for buildings—Factory made products of extruded polystyrene foam (XPS)—Specification, approved February 2009, IBR approved for appendix A to subpart R of part 431.

(2) DIN EN 13165:2009-02, ("DIN EN 13165"), Thermal insulation products for buildings—Factory made rigid polyurethane foam (PUR) products—Specification, approved February 2009, IBR

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approved for appendix A to subpart R of part 431.

(e) *NFRC*. National Fenestration Rating Council, 6305 Ivy Lane, Ste. 140, Greenbelt, MD 20770, (301) 589-1776, or <http://www.nfrc.org/>.

(1) NFRC 100-2010[E0A1], ("NFRC 100"), Procedure for Determining Fenestration Product U-factors, approved June 2010, IBR approved for appendix A to subpart R of part 431.

(2) [Reserved]

[74 FR 12074, Mar. 23, 2009, as amended at 76 FR 21605, Apr. 15, 2011; 76 FR 33631, June 9, 2011]

§ 431.304 Uniform test method for the measurement of energy consumption of walk-in coolers and walk-in freezers.

(a) *Scope*. This section provides test procedures for measuring, pursuant to EPCA, the energy consumption of refrigerated bottled or canned beverage vending machines.

(b) *Testing and Calculations—EISA 2007 Test Procedure*. Manufacturers shall use this paragraph (b) for the purposes of certifying compliance with the applicable energy conservation standards of the R-value of panels until January 1, 2015.

(1) The R value shall be the 1/K factor multiplied by the thickness of the panel.

(2) The K factor shall be based on ASTM C518 (incorporated by reference, see § 431.303).

(3) For calculating the R value for freezers, the K factor of the foam at 20 degrees Fahrenheit (average foam temperature) shall be used.

(4) For calculating the R value for coolers, the K factor of the foam at 55 degrees Fahrenheit (average foam temperature) shall be used.

(5) Foam shall be tested after it is produced in its final chemical form. Foam produced inside of a panel ("foam-in-place") must be tested in its final foamed state and must not include any structural members or non-foam materials other than the panel's protective skins or facers. A test sample less than or equal to 4 inches thick must be taken from the center of the foam-in-place panels. Foam produced as board stock may be tested prior to its incorporation into a final panel.

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(6) Manufacturers are not required to consider non-foam member and/or edge regions in ASTM C518 testing.

(c) *Testing and Calculations—Amended Test Procedures.* Manufacturers shall use this paragraph (c) for any representations of energy efficiency/energy use starting on October 12, 2011 and to certify compliance to the energy conservation standards of the R-value of panels on or after January 1, 2015.

(1) The R value shall be the 1/K factor multiplied by the thickness of the panel.

(2) The K factor shall be based on ASTM C518 (incorporated by reference; see § 431.303).

(3) For calculating the R value for freezers, the K factor of the foam at 20 degrees Fahrenheit (average foam temperature) shall be used.

(4) For calculating the R value for coolers, the K factor of the foam at 55 degrees Fahrenheit (average foam temperature) shall be used.

(5) For ASTM C518 testing, foam shall be tested after it is produced in its final chemical form. Foam produced inside of a panel (“foam-in-place”) must be tested in its final foamed state and must not include any structural members or non-foam materials other than the panel’s protective skins or facers. A test sample less than or equal to 4 inches thick must be taken from the center of the foam-in-place panels. Foam produced as board stock may be

tested prior to its incorporation into a final panel.

(6) Manufacturers are not required to consider non-foam member and/or edge regions in ASTM C518 testing.

(7) Determine the U-factor, conduction load, and energy use of walk-in cooler and walk-in freezer display panels, floor panels, and non-floor panels by conducting the test procedure set forth in appendix A to this subpart, sections 4.1, 4.2, and 4.3, respectively.

(8) Determine the energy use of walk-in cooler and walk-in freezer display doors and non-display doors by conducting the test procedure set forth in appendix A to this subpart, sections 4.4 and 4.5, respectively.

(9) Determine the Annual Walk-in Energy Factor of walk-in cooler and walk-in freezer refrigeration systems by conducting the test procedure set forth in AHRI 1250 (incorporated by reference; see § 431.303).

(10) Determine the annual energy consumption of walk-in cooler and walk-in freezer refrigeration systems:

(i) For systems consisting of a packaged dedicated system or a split dedicated system, where the condensing unit is located outdoors, by conducting the test procedure set forth in AHRI 1250 and recording the annual energy consumption term in the equation for annual walk-in energy factor in section 7 of AHRI 1250:

$$\text{Annual Energy Consumption} = \sum_{j=1}^n E(t_j)$$

where t_j and n represent the outdoor temperature at each bin j and the number of hours in each bin j , respectively, for the temperature bins listed in Table D1 of AHRI 1250.

(ii) For systems consisting of a packaged dedicated system or a split dedicated system where the condensing unit is located in a conditioned space, by performing the following calculation:

$$\text{Annual Energy Consumption} = \left(\frac{0.33 \times B\dot{L}H + 0.67 \times B\dot{L}L}{\text{Annual Walk-in Energy Factor}} \right) \times 8760$$

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where BLH and BLL for refrigerator and freezer systems are defined in sections 6.2.1 and 6.2.2, respectively, of AHRI 1250 and the annual walk-in energy factor is calculated from the results of the test procedures set forth in AHRI 1250.

(iii) For systems consisting of a single unit cooler or a set of multiple unit coolers serving a single piece of equipment and connected to a multiplex condensing system, by performing the following calculation:

$$\text{Annual Energy Consumption} = \left(\frac{0.33 \times BLH + 0.67 \times BLL}{\text{Annual Walk-in Energy Factor}} \right) \times 8760$$

where BLH and BLL for refrigerator and freezer systems are defined in section 7.9.2.2 and 7.9.2.3, respectively, of AHRI 1250 and the annual walk-in energy factor is calculated from the results of the test procedures set forth in AHRI 1250.

[74 FR 12074, Mar. 23, 2009, as amended at 76 FR 21605, Apr. 15, 2011; 76 FR 33631, June 9, 2011; 76 FR 65365, Oct. 21, 2011]

§ 431.305 [Reserved]

ENERGY CONSERVATION STANDARDS

§ 431.306 Energy conservation standards and their effective dates.

(a) Each walk-in cooler or walk-in freezer manufactured on or after January 1, 2009, shall—

(1) Have automatic door closers that firmly close all walk-in doors that have been closed to within 1 inch of full closure, except that this paragraph shall not apply to doors wider than 3 feet 9 inches or taller than 7 feet;

(2) Have strip doors, spring hinged doors, or other method of minimizing infiltration when doors are open;

(3) Contain wall, ceiling, and door insulation of at least R-25 for coolers and R-32 for freezers, except that this paragraph shall not apply to glazed portions of doors nor to structural members;

(4) Contain floor insulation of at least R-28 for freezers;

(5) For evaporator fan motors of under 1 horsepower and less than 460 volts, use—

(i) Electronically commutated motors (brushless direct current motors); or

(ii) 3-phase motors;

(6) For condenser fan motors of under 1 horsepower, use—

(i) Electronically commutated motors (brushless direct current motors);

(ii) Permanent split capacitor-type motors; or

(iii) 3-phase motors; and

(7) For all interior lights, use light sources with an efficacy of 40 lumens per watt or more, including ballast losses (if any), except that light sources with an efficacy of 40 lumens per watt or less, including ballast losses (if any), may be used in conjunction with a timer or device that turns off the lights within 15 minutes of when the walk-in cooler or walk-in freezer is not occupied by people.

(b) Each walk-in cooler or walk-in freezer with transparent reach-in doors manufactured on or after January 1, 2009, shall also meet the following specifications:

(1) Transparent reach-in doors for walk-in freezers and windows in walk-in freezer doors shall be of triple-pane glass with either heat-reflective treated glass or gas fill.

(2) Transparent reach-in doors for walk-in coolers and windows in walk-in cooler doors shall be—

(i) Double-pane glass with heat-reflective treated glass and gas fill; or

(ii) Triple-pane glass with either heat-reflective treated glass or gas fill.

(3) If the walk-in cooler or walk-in freezer has an antisweat heater without antisweat heat controls, the walk-in cooler and walk-in freezer shall have a total door rail, glass, and frame heater power draw of not more than 7.1 watts per square foot of door opening (for freezers) and 3.0 watts per square foot of door opening (for coolers).

(4) If the walk-in cooler or walk-in freezer has an antisweat heater with antisweat heat controls, and the total