(1) If preconditioning is to be initiated more than two days after the plywood or particleboard is produced or surface-finished, whichever is later, the panels must be dead-stacked or airtight wrapped until preconditioning is initiated.

(2) Panels selected for testing in the air chamber shall not be taken from the top or bottom of the stack.

(b) *Testing.* Testing must be conducted in accordance with the Standard Test Method for Determining Formaldehyde Levels from Wood Products Under Defined Test Conditions Using a Large Chamber, ASTM E 1333–96, with the following exceptions:

(1) The chamber shall be operated indoors.

(2) Plywood and particleboard panels shall be individually tested in accordance with the following loading ratios:

(i) Plywood—0.29 Ft2/Ft3, and

(ii) Particleboard—0.13 Ft2/Ft3.

(3) Temperature to be maintained inside the chamber shall be 77° plus or minus 2 °F.

(4) The test concentration (C) shall be standardized to a level (C_O) at a temperature (t_O) of 77 °F and 50% relative humidity (H_O) by the following formula:

$$C = C_O \times [1 + Ax\ (H - H_O)] \times e^{-R(1/t - 1/tO)}$$

where:

C = Test formaldehyde concentration
C_O = Standardized formaldehyde concentration
e = Natural log base
R = Coefficient of temperature (9799)
t = Actual test condition temperature (° K)
t_O = Standardized temperature (° K)
A = Coefficient of humidity (0.0175)
H = Actual relative humidity (%)
H_O = Standardized relative humidity (%)

The standardized level (C_O) is the concentration used to determine compliance with § 3280.308(a).

(5) The air chamber shall be inspected and recalibrated at least annually to insure its proper operation under test conditions.

[49 FR 32012, Aug. 9, 1984, as amended at 58 FR 55009, Oct. 25, 1993; 70 FR 72046, Nov. 30, 2005]

Subpart F—Thermal Protection

§ 3280.501 Scope.

This subpart sets forth the requirements for condensation control, air infiltration, thermal insulation and certification for heating and comfort cooling.

§ 3280.502 Definitions.

(a) The following definitions are applicable to subpart F only:

(1) *Pressure envelope* means that primary air barrier surrounding the living space which serves to limit air leakage. In construction using ventilated cavities, the pressure envelope is the interior skin.

(2) *Thermal envelope area* means the sum of the surface areas of outside walls, ceiling and floor, including all openings. The wall area is measured by multiplying outside wall lengths by the inside wall height from floor to ceiling. The floor and ceiling areas are considered as horizontal surfaces using exterior width and length.

§ 3280.503 Materials.

Materials used for insulation shall be of proven effectiveness and adequate durability to assure that required design conditions concerning thermal transmission are attained.

§ 3280.504 Condensation control and installation of vapor retarders.

(a) *Ceiling vapor retarders.* (1) In U_o Value Zones 2 and 3, ceilings must have a vapor retarder with a permeance of not greater than 1 perm (as measured by ASTM E 96–95 Standard Test Methods for Water Vapor Transmission of Materials) installed on the living space side of the roof cavity.

(2) For manufactured homes designed for Uo Value Zone 1, the vapor retarder may be omitted.

(b) *Exterior walls.* (1) Exterior walls must have a vapor retarder with a permeance no greater than 1 perm (dry cup method) installed on the living space side of the wall; or

(2) Unventilated wall cavities must have an external covering and/or sheathing that forms the pressure envelope. The covering and/or sheathing must have a combined permeance of not less than 5.0 perms. In the absence

of test data, combined permeance is permitted to be computed using the following formula: P total = $(1/[(1/P_1) + (1/P_2)])$, where P_1 and P_2 are the permeance values of the exterior covering and sheathing in perms. Formed exterior siding applied in sections with joints not caulked or sealed, are not considered to restrict water vapor transmission; or

(3) Wall cavities must be constructed so that ventilation is provided to dissipate any condensation occurring in these cavities; or

(4) Homes manufactured to be sited in ''humid climates'' or ''fringe climates'' as shown on the Humid and Fringe Climate Map in this paragraph are permitted to have a vapor retarder specified in paragraph (b)(1) of this section installed on the exterior side of the wall insulation or be constructed with an external covering and sheathing with a combined permeance of not greater than 1.0 perms, provided the interior finish and interior wall panel materials have a combined permeance of not less than 5.0 perms. The following need not meet the minimum combined permeance rating of not less than 5.0 perms for interior finish or wall panel materials:

(i) Kitchen back splash materials, less than 50 square feet in area installed around countertops, sinks, and ranges;

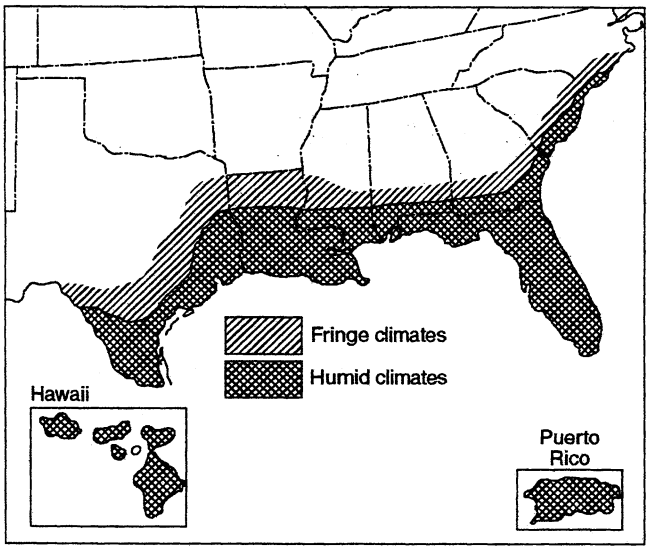
(ii) Bathroom tub areas, shower compartments;

(iii) Cabinetry and built-in furniture;

(iv) Trim materials;

(v) Hardboard wall paneling of less than 50 square feet in area under chair rails.

Humid and Fringe Climate Map



(5) The following areas of local governments (counties or similar areas, unless otherwise specified), listed by state are deemed to be within the humid and fringe climate areas shown on the Humid and Fringe Climate Map in paragraph (b)(4) of this section, and the vapor retarder or construction methods specified in paragraph (b)(4) of this section may be applied to homes built to be sited within these jurisdictions:

ALABAMA

Baldwin, Barbour, Bullock, Butler, Choctaw, Clarke, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Lowndes, Marengo, Mobile, Monroe, Montgomery, Pike, Washington, Wilcox.

FLORIDA

All counties and locations within the State of Florida.

GEORGIA

Appling, Atkinson, Bacon, Baker, Ben Hill, Berrien, Brantley, Brooks, Bryan, Calhoun, Camden, Charlton, Chatham, Clay, Clinch, Coffee, Colquitt, Cook, Crisp, Decatur, Dougherty, Early, Echols, Effingham, Evans, Glynn, Wayne, Grady, Irwin, Jeff Davis, Lanier, Lee, Liberty, Long, Lowndes, McIntosh, Miller, Mitchell, Pierce, Quitman, Randolph, Seminole, Tattnall, Terrell, Thomas, Tift, Turner, Ware, Worth.

HAWAII

All counties and locations within the State of Hawaii.

LOUISIANA

All counties and locations within the State of Louisiana.

MISSISSIPPI

Adams, Amite, Claiborne, Clarke, Copiah, Covington, Forrest, Franklin, George, Greene, Hancock, Harrison, Hinds, Issaquena, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Lamar, Lawrence, Lincoln, Marion, Pearl River, Perry, Pike, Rankin, Simpson, Smith, Stone, Walthall, Warren, Wayne, Wilkinson.

NORTH CAROLINA

Brunswick, Carteret, Columbus, New Hanover, Onslow, Pender.

SOUTH CAROLINA

Jasper, Beaufort, Colleton, Dorchester, Charleston, Berkeley, Georgetown, Horry.

TEXAS

Anderson, Angelina, Aransas, Atascosa, Austin, Bastrop, Bee, Bexar, Brazoria, Brazos, Brooks, Burleson, Caldwell, Calhoun, Cameron, Camp, Cass, Chambers, Cherokee, Colorado, Comal, De Witt, Dimmit, Duval, Falls, Fayette, Fort Bend, Franklin, Freestone, Frio, Galveston, Goliad, Gonzales, Gregg, Grimes, Guadalupe, Hardin, Harris, Harrison, Hays, Henderson, Hidalgo, Hopkins, Houston, Jackson, Jasper, Jefferson, Jim Hogg, Jim Wells, Karnes, Kaufman, Kennedy, Kinney, Kleberg, La Salle, Lavaca, Lee, Leon, Liberty, Limestone, Live Oak, Madison, Marion, Matagorda, Maverick, McMullen, Medina, Milam, Montgomery, Morris, Nacogdoches, Navarro, Newton, Nueces, Orange, Panola, Polk, Rains, Refugio, Robertson, Rusk, Sabine, San Augustine, San Jacinto, San Patricio, Shelby, Smith, Starr, Titus, Travis, Trinity, Tyler, Upshur, Uvalde, Val Verde, Van Zandt, Victoria, Walker, Waller, Washington, Webb, Wharton, Willacy, Williamson, Wilson, Wood, Zapata, Zavala.

(c) *Attic or roof ventilation.* (1) Attic and roof cavities shall be vented in accordance with one of the following:

(i) A minimum free ventilation area of not less than 1/300 of the attic or roof cavity floor area. At least 50 percent of the required free ventilation area shall be provided by ventilators located in the upper portion of the space to be ventilated. At least 40 percent shall be provided by eave, soffit or low gable vents. The location and spacing of the vent openings and ventilators shall provide cross-ventilation to the entire attic or roof cavity space. A clear air passage space having a minimum height of 1 inch shall be provided between the top of the insulation and the roof sheathing or roof covering. Baffles or other means shall be provided where needed to insure the 1 inch height of the clear air passage space is maintained.

(ii) A mechanical attic or roof ventilation system may be installed instead of providing the free ventilation area when the mechanical system provides a minimum air change rate of 0.02 cubic feet per minute (cfm) per sq. ft. of attic floor area. Intake and exhaust vents shall be located so as to provide air movement throughout space.

(2) Single section manufactured homes constructed with metal roofs and having no sheathing or underlayment installed, are not required to be provided with attic or roof cavity ventilation provided that the air leakage paths from the living space to the roof cavity created by electrical outlets, electrical junctions, electrical cable penetrations, plumbing penetrations, flue pipe penetrations and exhaust vent penetrations are sealed.

(3) Parallel membrane roof section of a closed cell type construction are not required to be ventilated.

(4) The vents provided for ventilating attics and roof cavities shall be designed to resist entry of rain and insects.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 58 FR 55009, Oct. 25, 1993; 70 FR 72046, Nov. 30, 2005; 71 FR 19639, Apr. 17, 2006]

§ 3280.505 Air infiltration.

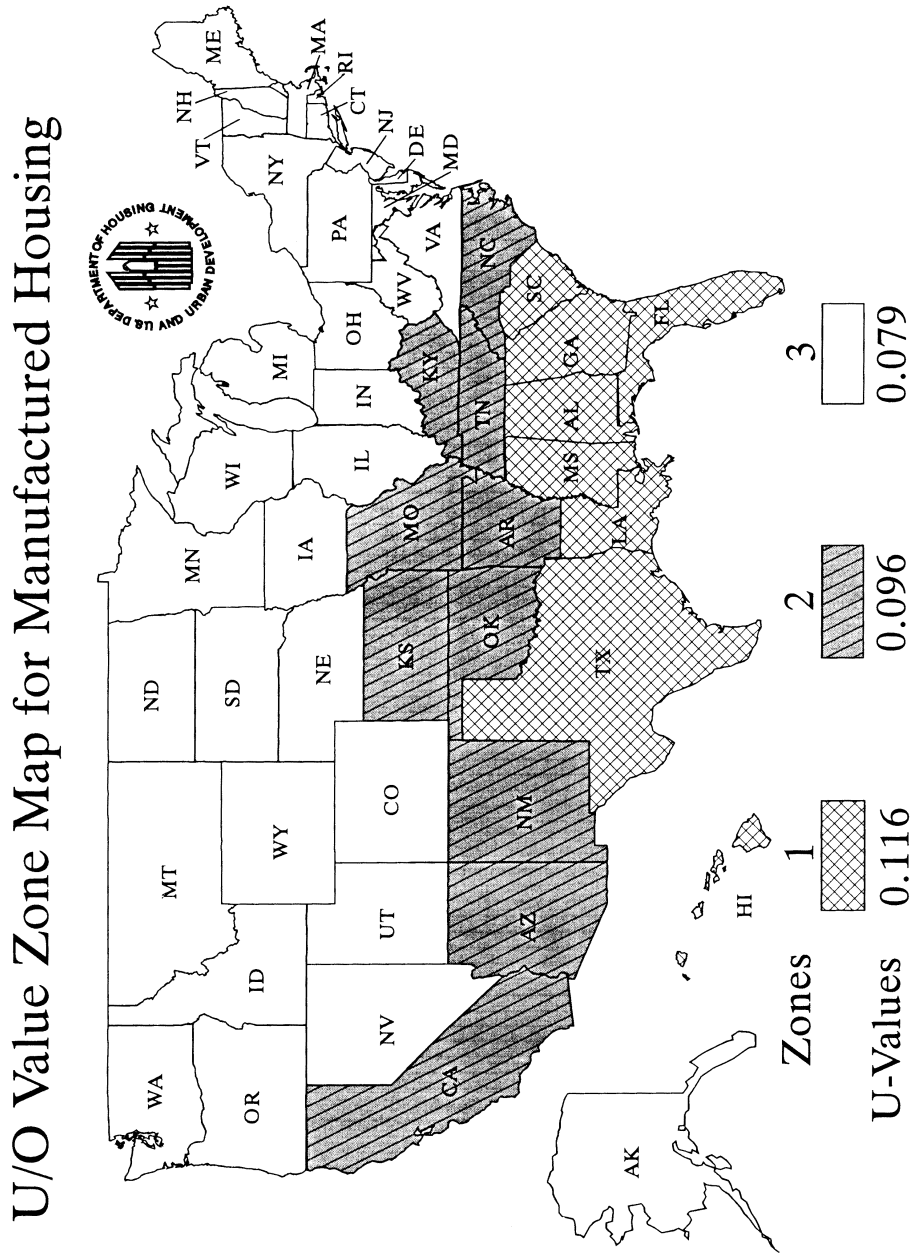
(a) *Envelope air infiltration.* The opaque envelope shall be designed and constructed to limit air infiltration to the living area of the home. Any design, material, method or combination thereof which accomplishes this goal may be used. The goal of the infiltration control criteria is to reduce heat loss/heat gain due to infiltration as much as possible without impinging on health and comfort and within the limits of reasonable economics.

(1) *Envelope penetrations.* Plumbing, mechanical and electrical penetrations of the pressure envelope not exempted by this part, and installations of window and door frames shall be constructed or treated to limit air infiltration. Penetrations of the pressure envelope made by electrical equipment, other than distribution panel boards and cable and conduit penetrations, are exempt from this requirement. Cable penetrations through outlet boxes are considered exempt.

(2) *Joints between major envelope elements.* Joints not designed to limit air infiltration between wall-to-wall, wall-to-ceiling and wall-to-floor connections shall be caulked or otherwise sealed. When walls are constructed to form a pressure envelope on the outside of the wall cavity, they are deemed to meet this requirement.

§ 3280.506 Heat loss/heat gain.

The manufactured home heat loss/heat gain shall be determined by methods outlined in §§ 3280.508 and 3280.509. The Uo (Coefficient of heat transmission) value zone for which the manufactured home is acceptable and the lowest outdoor temperature to which the installed heating equipment will maintain a temperature of 70 F shall be certified as specified in § 3280.510 of this subpart. The Uo value zone shall be determined from the map in figure 506.



(a) *Coefficient of heat transmission.* The overall coefficient of heat transmission (Uo) of the manufactured home for the respective zones and an indoor design temperature of 70 F, including internal and external ducts, and excluding infiltration, ventilation and condensation control, shall not exceed

the Btu/(hr.) (sq. ft.) (F) of the manufactured home envelope are as tabulated below:

Uo value zone	Maximum coefficient of heat transmission
1	0.116 Btu/(hr.) (sq. ft.) (F).
2	0.096 Btu/(hr.) (sq. ft.) (F).
3	0.079 Btu/(hr.) (sq. ft.) (F).

(b) To assure uniform heat transmission in manufactured homes, cavities in exterior walls, floors, and ceilings shall be provided with thermal insulation.

(c) Manufactured homes designed for Uo Value Zone 3 shall be factory equipped with storm windows or insulating glass.

[58 FR 55009, Oct. 25, 1993; 59 FR 15113, Mar. 31, 1994]

§ 3280.507 Comfort heat gain.

Information necessary to calculate the home cooling load shall be provided as specified in this part.

(a) *Transmission heat gains.* Homes complying with this section shall meet the minimum heat loss transmission coefficients specified in § 3280.506(a).

§ 3280.508 Heat loss, heat gain and cooling load calculations.

(a) Information, values and data necessary for heat loss and heat gain determinations must be taken from the 1997 ASHRAE Handbook of Fundamentals, Inch-Pound Edition, chapters 22 through 27. The following portions of those chapters are not applicable:

23.1 Steel Frame Construction
23.2 Masonry Construction
23.3 Foundations and Floor Systems
23.15 Pipes
23.17 Tanks, Vessels, and Equipment
23.18 Refrigerated Rooms and Buildings
24.18 Mechanical and Industrial Systems
25.19 Commercial Building Envelope Leakage
27.9 Calculation of Heat Loss from Crawl Spaces

(b) The calculation of the manufactured home's transmission heat loss coefficient (Uo) must be in accordance with the fundamental principles of the 1997 ASHRAE Handbook of Fundamentals, Inch-Pound Edition, and, at a minimum, must address all the heat loss or heat gain considerations in a manner consistent with the calculation procedures provided in the document, Overall U-values and Heating/Cooling Loads—Manufactured Homes—February 1992–PNL 8006, HUD User No. 0005945.

(c) Areas where the insulation does not fully cover a surface or is compressed shall be accounted for in the U-calculation (see § 3280.506). The effect of framing on the U-value must be included in the Uo calculation. Other low-R-value heat-flow paths (''thermal shorts'') shall be explicitly accounted for in the calculation of the transmission heat loss coefficient if in the aggregate all types of low-R-value paths amount to more than 1% of the total exterior surface area. Areas are considered low-R-value heat-flow paths if:

(1) They separate conditioned and unconditioned space; and

(2) They are not insulated to a level that is at least one-half the nominal insulation level of the surrounding building component.

(d) *High efficiency heating and cooling equipment credit.* The calculated transmission heat loss coefficient (Uo) used for meeting the requirement in § 3280.506(a) may be adjusted for heating and cooling equipment above that required by the National Appliance Energy Conservation Act of 1987 (NAECA) by applying the following formula:

Uo adjusted = Uo standard×[1+(0.6) (heating efficiency increase factor)+(cooling multiplier) (cooling efficiency increase factor)]

where:

Uo standard = Maximum Uo for Uo Zone required by § 3280.506(a)

Uo adjusted = Maximum Uo standard adjusted for high efficiency HVAC equipment

Heating efficiency increase factor = The increase factor in heating equipment efficiency measured by the Annual Fuel Utilization Efficiency (AFUE), or the Heating Seasonal Performance Factor (HSPF) for heat pumps, above that required by NAECA (indicated as ''NAECA'' in formula). The formula is heating efficiency increase factor = AFUE (HSPF) home − AFUE (or HSPF) NAECA divided by AFUE (HSPF) NAECA.

Cooling efficiency increase factor = the increase factor in the cooling equipment

efficiency measured by the Seasonal Energy Efficiency Ratio (SEER) above that required by NAECA.

The formula being cooling equipment=SEER home—SEER NAECA divided by SEER NAECA.

The cooling multiplier for the Uo Zone is from the following table:

Uo zone	Cooling multiplier (Cm)
1	0.60 (Florida only).
1	0.20 (All other locations).
2	0.07.
3	0.03.

(e) U values for any glazing (e.g., windows, skylights, and the glazed portions of any door) must be based on tests using AAMA 1503.1–1988, Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections, or the National Fenestration Rating Council 100, 1997 Edition, Procedure for Determining Fenestration Product U-factors. In the absence of tests, manufacturers are to use the residential window U values contained in Chapter 29, Table 5 of the 1997 ASHRAE Handbook of Fundamentals, Inch-Pound Edition. In the event that the classification of the window type is indeterminate, the manufacturer must use the classification that gives the higher U value. Where a composite of materials from two different product types is used, the product is to be assigned the higher U value. For the purpose of calculating U_o values, storm windows are treated as an additional pane.

(f) *Annual energy used based compliance.* As an alternative, homes may demonstrate compliance with the annual energy used implicit in the coefficient of heat transmission (Uo) requirement. The annual energy use determination must be based on generally accepted engineering practices. The general requirement is to demonstrate that the home seeking compliance approval has a projected annual energy use, including both heating and cooling, less than or equal to a similar ''base case'' home that meets the standard. The energy use for both homes must be calculated based on the same assumptions; including assuming the same dimensions for all boundaries between conditioned and unconditioned spaces, site characteristics, usage patterns and climate.

[58 FR 55011, Oct. 25, 1993, as amended at 70 FR 72047, Nov. 30, 2005]

§ 3280.509 Criteria in absence of specific data.

In the absence of specific data, for purposes of heat-loss/gain calculation, the following criteria shall be used:

(a) *Infiltration heat loss.* In the absence of measured infiltration heat loss data, the following formula shall be used to calculate heat loss due to infiltration and intermittently operated fans exhausting to the outdoors. The perimeter calculation shall be based on the dimensions of the pressure envelope.

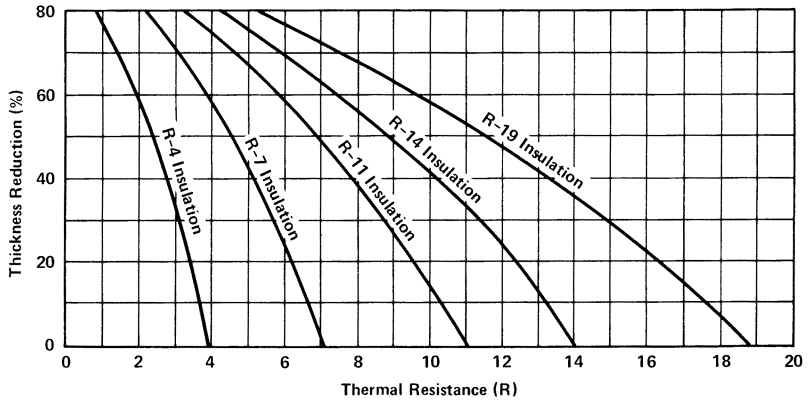
Infiltration Heat-Loss=0.7 (T) (ft. of perimeter), BTU/hr.

where: T=70 minus the heating system capacity certification temperature stipulated in the Heating Certificate, in F.

(b) *Framing areas.*

Wall	15 percent of wall area less windows and doors.
Floor and Ceiling	10 percent of the area.

(c) *Insulation compression.* Insulation compressed to less than nominal thickness shall have its nominal R-values reduced for that area which is compressed in accordance with the following graph:



When insulation is installed over the framing members the thermal performance of the insulation is reduced due to compression at the framing members. The Resistance value of the insulation between the framing members is reduced by 12.5 percent for framing members 16″ O.C., 8.5 percent for framing members 24″ O.C., and 4 percent for framing members 48″ O.C.

(d) *Air supply ducts within floor cavity.* Air supply ducts located within a floor cavity shall be assumed to be heating or cooling the floor cavity to living space temperatures unless the duct is structurally isolated by the framing system or thermally insulated from the rest of the floor cavity with a thermal insulation at least equal to R–4.

(e) *Air supply ducts within ceiling cavity.* Where supply ducts are located in ceiling cavities, the influence of the duct on cavity temperatures shall be considered in calculating envelope heat loss or heat gain.

(f) The supply duct loss (and/or heat gain where applicable—See § 3280.511) shall be calculated using the actual duct surface area and the actual thickness of insulation between the duct and outside of the manufactured home. If there is an air space of at least ½ inch between the duct and the insulation, heat loss/gain need not be calculated if the cavity in which the duct is located is assumed to be at living space temperature. The average temperature inside the supply duct, including ducts installed outside the manufactured home, shall be assumed to be 130 F for purposes of calculation of heat loss and 60 F for heat gain.

(g) *Return air cavities.* Cavities used as return air plenums shall be considered to be at living space temperature.

§ 3280.510 Heat loss certificate.

The manufactured home manufacturer shall permanently affix the following ''Certificate'' to an interior surface of the home that is readily visible to the homeowner. The ''Certificate'' shall specify the following:

(a) *Heating zone certification.* The design zone at which the manufactured home heat loss complies with § 3280.506(a).

(b) *Outdoor certification temperature.* The lowest outdoor temperature at which the installed heating equipment will maintain a 70 °F temperature inside the home without storm sash or insulating glass for Zones 1 and 2, and with storm sash or insulating glass for Zone 3 and complying with § 3280.508 and § 3280.509.

(c) *Operating economy certification temperature.* The temperature to be specified for operating economy and energy conservation shall be 20 °F or 30% of the design temperature difference, whichever is greater, added to the temperature specified as the heating system capacity certification temperature without storm windows or insulating glass in Zones 1 and 2 and with storm windows or insulating glass in Zone 3. Design temperature difference is 70°

minus the heating system capacity certification temperature in degrees Fahrenheit.

HEATING CERTIFICATE

Home Manufacturer _____
Plant Location _____
Home Model _____

(Include Uo Value Zone Map)

This manufactured home has been thermally insulated to conform with the requirements of the Federal Manufactured Home Construction and Safety Standards for all locations within Uo Value Zone ____.

Heating Equipment Manufacturer _____
Heating Equipment Model _____

The above heating equipment has the capacity to maintain an average 70F temperature in this home at outdoor temperatures of [see paragraph (b) of this section] F. To maximize furnace operating economy and to conserve energy, it is recommended that this home be installed where the outdoor winter design temperature (97 1/2%) is not higher than [see paragraph (c) of this section] F degrees Fahrenheit.

The above information has been calculated assuming a maximum wind velocity of 15 MPH at standard atmospheric pressure.

(d) The following additional statement must be provided on the heating certificate and data plate required by § 3280.5 when the home is built with a vapor retarder of not greater than one perm (dry cup method) on the exterior side of the insulation: ''This home is designed and constructed to be sited only in humid or fringe climate regions as shown on the Humid and Fringe Climate Map.'' A reproduction of the Humid and Fringe Climate Map in § 3280.504 is to be provided on the heating certificate and data plate. The map must be not less than 3½ inch × 2¼ inch in size and may be combined with the U_o Value Zone Map for Manufactured Housing in § 3280.506.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 58 FR 55011, Oct. 25, 1993; 70 FR 72048, Nov. 30, 2005]

§ 3280.511 Comfort cooling certificate and information.

(a) The manufactured home manufacturer shall permanently affix a ''Comfort Cooling Certificate'' to an interior surface of the home that is readily visible to the home owner. This certificate may be combined with the heating certificate required in § 3280.510. The manufacturer shall comply with one of the following three alternatives in providing the certificate and additional information concerning the cooling of the manufactured home:

(1) *Alternative I.* If a central air conditioning system is provided by the home manufacturer, the heat gain calculation necessary to properly size the air conditioning equipment shall be in accordance with procedures outlined in chapter 22 of the 1989 ASHRAE Handbook of Fundamentals, with an assumed location and orientation. The following shall be supplied in the Comfort Cooling Certificate:

Air Conditioner Manufacturer _____
Air Conditioner Model _____

Certified Capacity _____ BTU/Hr. in accordance with the appropriate Air Conditioning and Refrigeration Institute Standards

The central air conditioning system provided with this home has been sized, assuming an orientation of the front (hitch) end of the home facing _____ and is designed on the basis of a 75 °F indoor temperature and an outdoor temperature of __ °F dry bulb and __ °F wet bulb.

EXAMPLE ALTERNATE I

COMFORT COOLING CERTIFICATE

Manufactured Home Mfg _____
Plant Location _____
Manufactured Home Model _____
Air Conditioner Manufacturer _____

Certified Capacity _____ BTU/Hr. in accordance with the appropriate Air Conditioning and Refrigeration Institute Standards.

The central air conditioning system provided with this home has been sized assuming an orientation of the front (hitch end) of the home facing _____. On this basis, the system is designed to maintain an indoor temperature of 75 °F when outdoor temperatures are __ °F dry bulb and __ °F wet bulb.

The temperature to which this home can be cooled will change depending upon the amount of exposure of the windows to the sun's radiant heat. Therefore, the home's heat gains will vary dependent upon its orientation to the sun and any permanent shading provided. Information concerning the calculation of cooling loads at various locations, window exposures and shadings are provided in chapter 22 of the 1989 edition of the ASHRAE Handbook of Fundamentals.

(2) *Alternative 2.* For each home suitable for a central air cooling system,

the manufacturer shall provide the following statement: ''This air distribution system of this home is suitable for the installation of a central air conditioning system.''

EXAMPLE ALTERNATE 2

COMFORT COOLING CERTIFICATE

Manufactured Home Manufacturer _____
Plant Location _____
Manufactured Home Model _____

This air distribution system of this home is suitable for the installation of central air conditioning.

The supply air distribution system installed in this home is sized for Manufactured Home Central Air Conditioning System of up to _____ B.T.U./Hr. rated capacity which are certified in accordance with the appropriate Air Conditioning and Refrigeration Institute Standards. When the air circulators of such air conditioners are rated at 0.3 inch water column static pressure or greater for the cooling air delivered to the manufactured home supply air duct system.

Information necessary to calculate cooling loads at various locations and orientations is provided in the special comfort cooling information provided with this manufactured home.

(3) *Alternative 3.* If the manufactured home is not equipped with an air supply duct system, or if the manufacturer elects not to designate the home as being suitable for the installation of a central air conditioning system, the manufacturer shall provide the following statement: ''This air distribution system of this home has not been designed in anticipation of its use with a central air conditioning system.''

EXAMPLE ALTERNATE 3

COMFORT COOLING CERTIFICATE

Manufactured Home Mfg _____
Plant Location _____
Manufactured Home Model _____

The air distribution system of this home has not been designed in anticipation of its use with a central air conditioning system.

(b) For each home designated as suitable for central air conditioning the manufacturer shall provide the maximum central manufactured home air conditioning capacity certified in accordance with the ARI Standard 210/240–89 Unitary Air-Conditioning and Air-Source Heat Pump Equipment and in accordance with § 3280.715(a)(3). If the capacity information provided is based on entrances to the air supply duct at other than the furnace plenum, the manufacturer shall indicate the correct supply air entrance and return air exit locations.

(c) *Comfort cooling information.* For each manufactured home designated, either ''suitable for'' or ''provided with'' a central air conditioning system, the manufacturer shall provide comfort cooling information specific to the manufactured home necessary to complete the cooling load calculations. The comfort cooling information shall include a statement to read as follows:

To determine the required capacity of equipment to cool a home efficiently and economically, a cooling load (heat gain) calculation is required. The cooling load is dependent on the orientation, location and the structure of the home. Central air conditioners operate most efficiently and provide the greatest comfort when their capacity closely approximates the calculated cooling load. Each home's air conditioner should be sized in accordance with chapter 22 of the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals, 1989 Edition, once the location and orientation are known.

INFORMATION PROVIDED BY THE MANUFACTURER NECESSARY TO CALCULATE SENSIBLE HEAT GAIN

Walls (without windows and doors)	U
Ceilings and roofs of light color	U
Ceilings and roofs of dark color	U
Floors	U
Air ducts in floor	U
Air ducts in ceiling	U
Air ducts installed outside the home	U

Information necessary to calculate duct areas.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 58 FR 55012, Oct. 25, 1993]

Subpart G—Plumbing Systems

§ 3280.601 Scope.

Subpart G of this standard covers the plumbing materials, fixtures, and equipment installed within or on manufactured homes. It is the intent of this subpart to assure water supply, drain, waste and vent systems which permit satisfactory functioning and provide for health and safety under all conditions of normal use.